Grade 6
C1. Patterns and Relationships

	Curriculum Expectations	Pages
C1.1	identify and describe repeating and growing patterns, including patterns found in real-life contexts	5 – 8, 12 – 13, 59 – 64
C1.2		3, 60, 80
C1.3	determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in repeating and growing patterns	15 – 19, 25, 31 – 44, 65 – 80
C1.4	create and describe patterns to illustrate relationships among whole numbers and decimal tenths	20 – 24, 26 – 30, 45 – 58

Preview of 130 pages from this product that contains 401 pages total.

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Curriculum Connection
C1.1

Increasing Patterns – Shapes

Part 1 Shade in the block that was added to the pattern

1)	Figure 1	Figure 2	Figure 3	Figure 4
2)	Fi	Figure 2	Figure 3	Figure 4
3)	Figure 1	Fig	Figure 3	Figure 4
4)	Figure 1		re 3	Figure 4

Part 2 Shade in the two blocks t ere ad th pattern

1)	Figure 1	Figure 2	Figure 3	
2)	Figure 1	Figure 2	Figure 3	Figure 4
3)	Figure 1	Figure 2	Figure 3	Figure 4
4)	Figure 1	Figure 2	Figure 3	Figure 4

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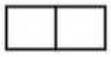
Curriculum Connection
C1.1, C1.2

Creating Increasing Patterns with Squares

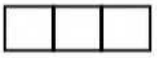
Part 1 Draw the next figure in the pattern by adding the correct number of blocks



1) Figure 1 Figure 2 Figure 3 Figure 4



2) Figure 1 Figure 2 Figure 3 Figure 4



3) Figure 1 Figure 2 Figure 3 Figure 4

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Part 2 Draw increasing patterns using pattern blocks

1) Figure 1 Figure 2 Figure 3 Figure 4

2) Figure 1 Figure 2 Figure 3 Figure 4

3) Figure 1 Figure 2 Figure 3 Figure 4

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C1.3

Increasing Pattern Rules - Adding

Part 1 Continue the increasing patterns below

1) 47, 55, 63, _____, _____, _____

Pattern Rule: Start at 47, add _____ each time

2) 108, 11_____, _____, _____

Pattern _____ add _____ each time

3) 20_____, 227, _____, _____

Pattern Rule: _____ each time

4) 326, 342, 358, _____, _____

Pattern Rule: Start at _____ e

5) 482, 499, 516, _____, _____, _____

Pattern Rule: Start at _____ add _____ each t

BONUS

Lily gets paid based on how fast she works. She is getting faster each day! Check out her paycheque for the last 5 weeks.

Week	Pay
1	100
2	120
3	150
4	190
5	240

Question

How much will she make in week 10 if the pattern continues?

Part 2 Write your own patterns using the _____ rules

1) _____, _____, _____, _____, _____, _____

Pattern Rule: Start at 124, add 7 each time

2) _____, _____, _____, _____, _____, _____

Pattern Rule: Start at 465, add 15 each time

3) _____, _____, _____, _____, _____, _____

Pattern Rule: Start at 382, add 6 each time

4) _____, _____, _____, _____, _____, _____

Pattern Rule: Start at 505, add 12 each time

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Curriculum Connection
C1.3

Increasing Patterns – Word Problems

Questions Solve the word problems below

1) Courtney is heading to college in 6 months. She begins saving more and more money. Her savings are represented in the table of values.



Month	Savings
April	500
May	800
June	1200
July	1700
August	

a) What [illegible] pattern rule?

b) [illegible], how much will she save at end o[illegible]e 6 m[illegible] she goes to college?

2) Billy is improving at ba[illegible] In the [illegible] games of the season, his points pe[illegible] cre[illegible] points have been represented i[illegible]e ta[illegible]



Games	Points
1	3
2	5
3	9
[illegible]	15
[illegible]	23
[illegible]	[illegible]3

a) What is the pattern rule?

b) If the pattern continues, how many points will he score in the 10th game?

3) Emmett has a math test next week. He plans to study each night for [illegible]ext 7 nights. The first night he will study for 10 minutes. The second night he will study for 10 minutes plus an additional 10 minutes. The third night he will study for 10 minutes plus an additional 20 minutes. The fourth night he will study for 10 minutes plus an additional 30 minutes.

a) Complete the table of values

Night	1	2	3	4	5	6	7
Minutes							

b) If his studying pattern continues, how many minutes will he study on the 10th night?



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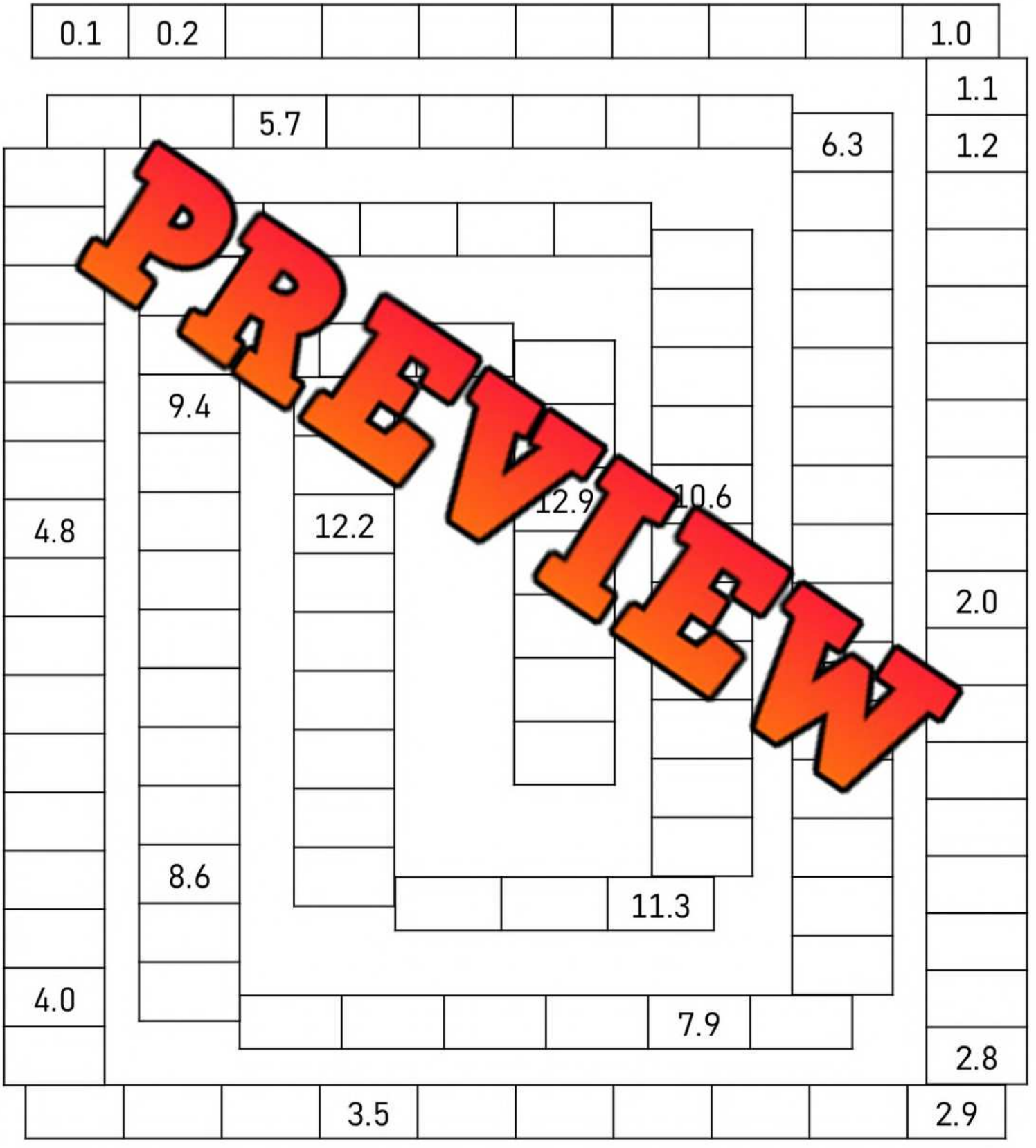
Counting by Tenths – Decimal Pattern

Questions Continue counting by tenths by filling in the missing boxes



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C1.4

Increasing Decimal Pattern Rules - Tenths

Part 1 Increasing Patterns - Tenths

1) 6.0, 8.0, 10.0, _____, _____, _____, _____, _____, _____, _____

Pattern Rule: Start at 6.0, add 2.0 each time.

2) 5.8, 5[illegible]0, _____, _____, _____, _____, _____, _____, _____

Patter[illegible] _____

3) 12.[illegible]13.0, _____, _____, _____, _____, _____, _____, _____

Pattern Rule: _____

4) 18.1, 19.2, 20.3, _____, _____, _____, _____, _____, _____

Pattern Rule: _____

5) 34.2, 34.4, 34.6, _____, _____, _____, _____, _____, _____, _____

Pattern Rule: _____

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Part 2 Fill in the boxes below by continuing the [illegible]g p[illegible]

1)	15.2	15.4	15.6				
2)	55.0	55.5	56.0				
3)	102.6	102.9	103.2				
4)	142.2	142.7	143.2				

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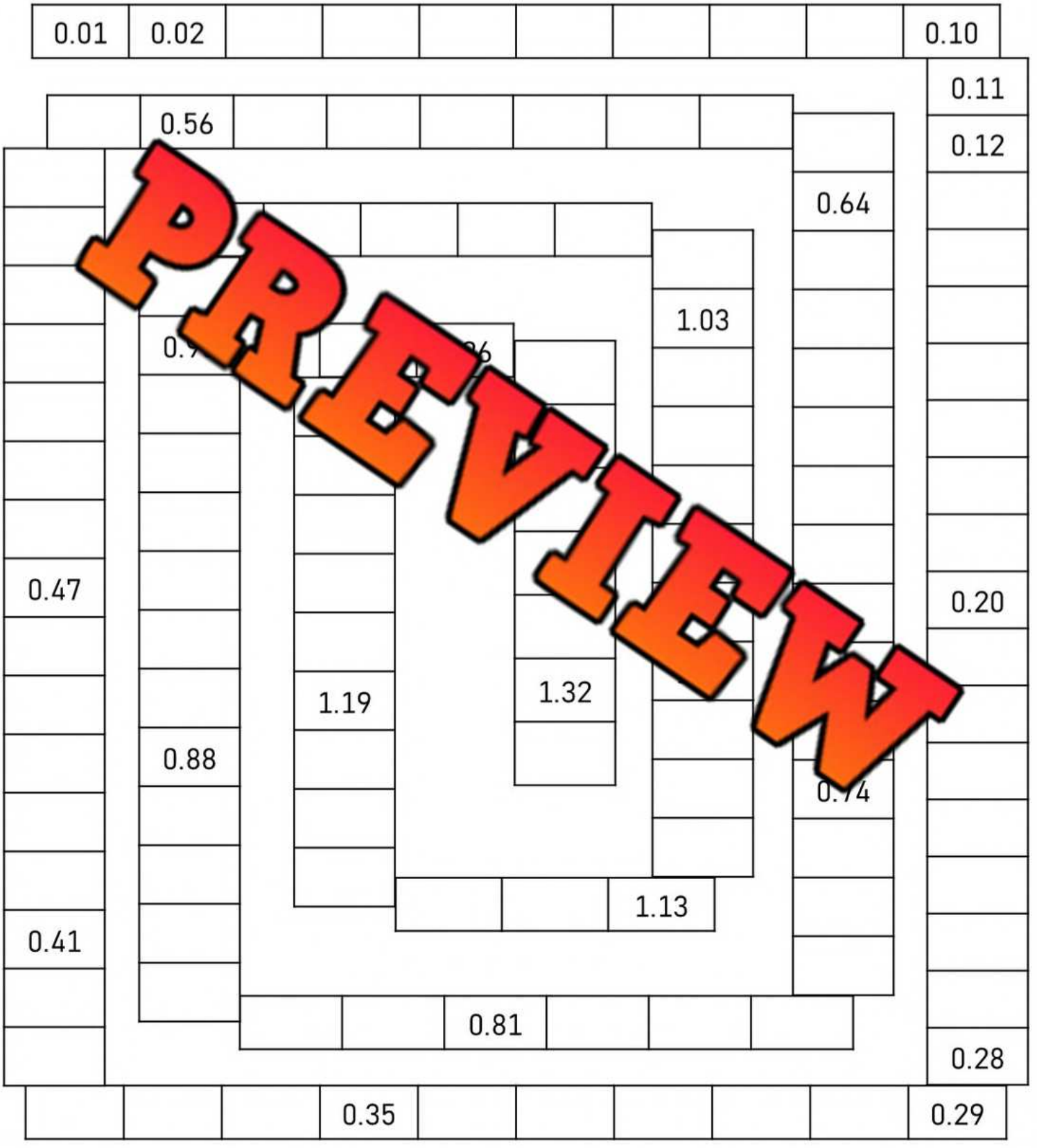
Counting by Hundredths – Decimal Pattern

Questions Continue counting by hundredths by filling in the missing boxes



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C1.4

Shrinking Decimal Patterns - Tenths

Part 1 Decreasing Patterns - Tenths

1) 14.0, 13.0, 12.0, _____, _____, _____, _____, _____, _____, _____

Pattern Rule: _____

2) 25.3, 24.3, _____, _____, _____, _____, _____, _____, _____

Pattern Rule: _____

3) 34.5, 34.0, 33.5, _____, _____, _____, _____, _____, _____

Pattern Rule: _____

4) 48.8, 48.7, 48.6, _____, _____, _____, _____, _____, _____

Pattern Rule: _____

5) 72.9, 71.8, 70.7, _____, _____, _____, _____, _____, _____

Pattern Rule: _____

PREVIEW

Part 2 Fill in the boxes by continuing the decreasing patterns

1)	16.4	16.0	15.6				
2)	28.8	28.1	27.4				
3)	58.9	57.5	56.1				
4)	97.2	96.0	94.8				

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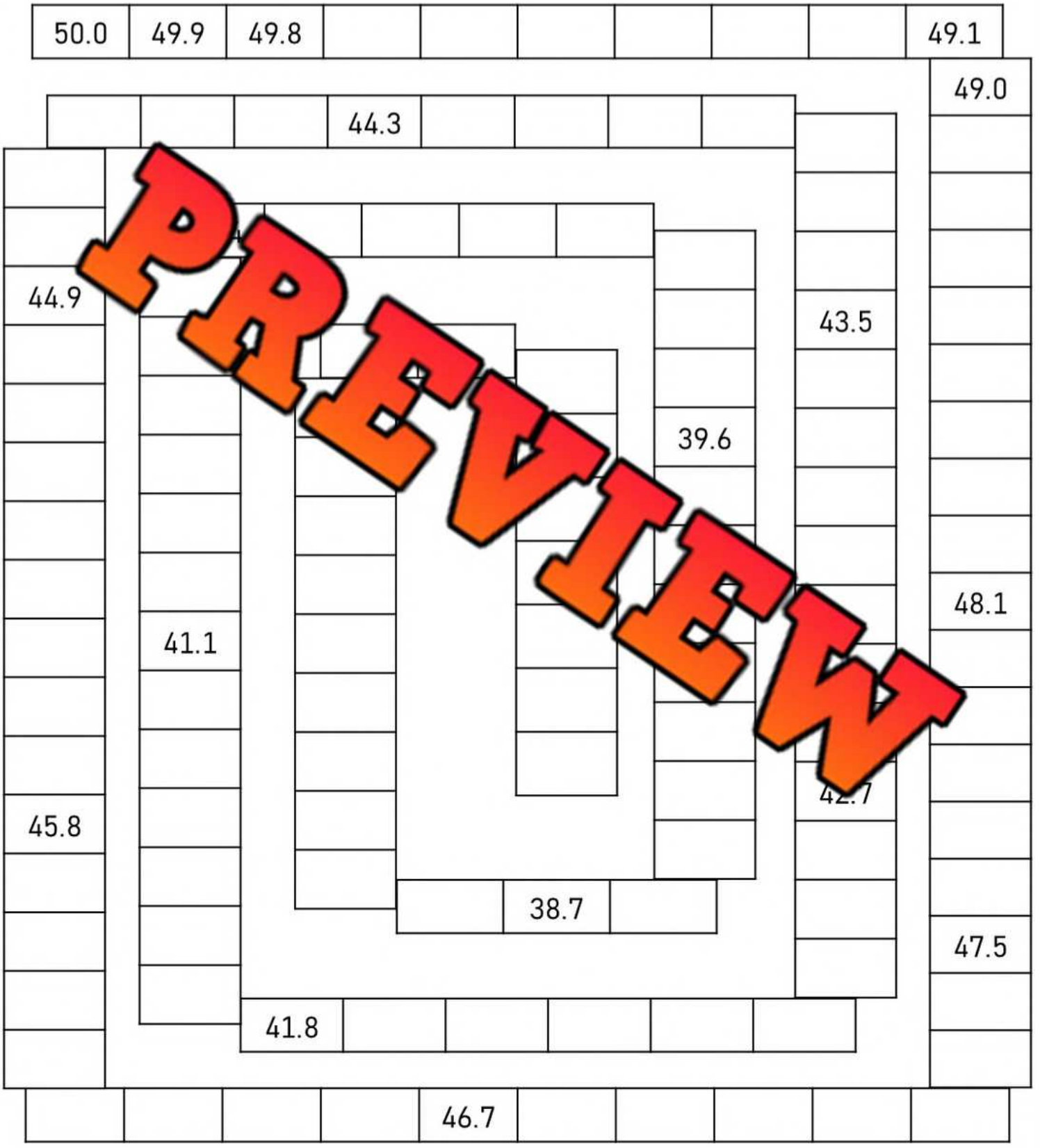
C1.4

Counting Backwards by Tenths – Decimal Pattern

Questions Continue counting by tenths by filling in the missing boxes



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Shrinking Decimal Patterns Word Problems

Questions | Answer the questions below



	Word Problems
1	A candle is 10.5 cm tall. After each hour, it burns down by 0.75 cm. How tall will the candle be after 5 hours?
2	Scientist measuring the temperature of a cooling liquid. It starts at 92.4°C and decreases by 2°C every 10 minutes. What will be the temperature after 6 intervals of 10 minutes?
3	A snowboarder starts 500 m above the slope and descends 12.75 meters per minute. How high will the snowboarder be after 7 minutes?
4	The hopscotch game has squares labeled 10, 7.5, 5, _____, 1.5. Identify the missing numbers and describe the pattern rule.
5	A hot cup of coffee is 85°C. Every 5 minutes, it cools by 5.55°C. What will be the temperature after 6 intervals?
6	A drone's battery starts at 100% and loses 7.5% every 10 minutes. What percentage will be left after 50 minutes?

PREVIEW

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Curriculum Connection
C1.3

Increasing Patterns - Multiplication

x2 x2 x2

2, 4, 8, 16, 32, 64

Pattern Rule: Start at 2, multiply by 2 each time.



Questions | Increasing Patterns – Multiplication

PREVIEW

1) 1, _____, _____, _____, _____, _____ Pattern Rule: _____	6) 2, 8, 32, _____, _____, _____ Pattern Rule: _____
2) 4, 20, 100, _____, _____, _____ Pattern Rule: _____	7) 4, 12, 36, _____, _____, _____ Pattern Rule: _____
3) 3, 18, 108, _____, _____, _____ Pattern Rule: _____	8) 3, 15, _____, _____, _____, _____ Pattern Rule: _____
4) 10, 100, 1000, _____, _____, _____ Pattern Rule: _____	9) 7, 21, 63, _____, _____, _____ Pattern Rule: _____
5) 10, 50, 250, _____, _____, _____ Pattern Rule: _____	10) 6, 24 96, _____, _____, _____ Pattern Rule: _____

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Curriculum Connection
C1.3

Pattern Rule – Multiplication

Part 1 Continue the increasing patterns below

1) 4, 20, 100, _____, _____, _____, _____, _____

Pattern Rule: Start at 4, multiply by _____ each time

2) 2, 8, 3_____, _____, _____, _____, _____

Patte_____ _____ multiply by _____ each time

3) 12, 2_, 48_____, _____, _____, _____, _____

Pattern Rule: _____ _____ multiply by _____ each time

4) 5, 25, 125, _____, _____, _____

Pattern Rule: Start at _____ _____ each time

5) 8, 24, 72, _____, _____, _____, _____

Pattern Rule: Start at _____ multi_____ch time

PREVIEW

Part 2 Write your own patterns using the patt_____

1) _____, _____, _____, _____

Pattern Rule: Start at 9, multiply by 2 each time

2) _____, _____, _____, _____, _____

Pattern Rule: Start at 6, multiply by 3 each time

3) _____, _____, _____, _____, _____

Pattern Rule: Start at 4, multiply by 5 each time

4) _____, _____, _____, _____, _____

Pattern Rule: Start at 10, multiply by 2 each time

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Curriculum Connection
C1.3

Pattern Rule - Division

Part 1 Continue the decreasing patterns below

#	Pattern	Rule ÷ ___
1)	15 625, 3 125, 625, 125, 5	
2)	3 072, 768, 192, 48, 12, 3	
3)	5 184, 864, 144, 24, 4	
4)	189, 63, 21, 7	
5)	1 024, 32, 16, 8	
6)	18 750, 3 750, 150,	

PREVIEW

Part 2 Write your own patterns using one of the rules below

1) _____, _____, _____, _____, _____, _____

Pattern Rule: Start at 256, divide by 2 each time

2) _____, _____, _____, _____, _____, _____

Pattern Rule: Start at 1 458, divide by 3 each time

3) _____, _____, _____, _____, _____, _____

Pattern Rule: Start at 25 000, divide by 5 each time

4) _____, _____, _____, _____, _____, _____

Pattern Rule: Start at 4 096, divide by 4 each time

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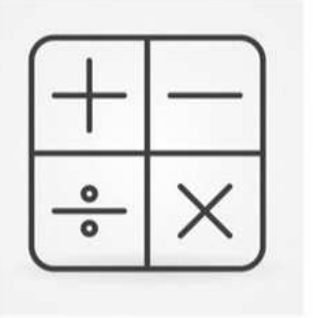
Task Cards: Patterning – All Operations

Objective What are we learning about?

To recognize and create patterns using the four basic mathematical operations.

Materials What you will need for the activity.

- 24 ta
- S ets er for answers
- Pe



Instructions ou wi the activity

1. Introduce the concept o s in perations and their relevance to problem-solving in everyda e.
2. Organize the students into pairs an ovide e air their sets of task cards.
3. Give each pair an answer recording sheet t dow ir ses.
4. Encourage teamwork by having students collabora eir p on finding solutions.
5. Allow students to select any task card to begin with, emphasiz an complete the cards in any order they prefer.
6. Instruct students to record the letter of their chosen answer (A, B, or C) on their answer sheet beside the task card's number.
7. Consider using a timer to create a dynamic challenge, adjusting the duration to fit the lesson's objectives and complexity.
8. After the activity, review the answers collectively, discussing any challenging patterns and strategies used to solve them.
9. Have students reflect on the activity, sharing the methods they applied and obstacles they overcame.

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Curriculum Connection
C1.4

Task Cards | Cut out the task cards below

Card 9:
Start with 36. Subtract 6 and then divide by 3 for the next number. What is the second number?

a) 10
b) 12
c) 9

Card 13:
Start with 40. Subtract 5 and then add 10 for the next number. What is the second number?

a) 50
b) 45
c) 55

Card 10:
Begin with 60 and then add 15 for the next number. What is the second number?

a) 35
b) 20
c) 25

Card 14:
Begin with 72. Divide by 6 and then add 3 for the next number. What is the second number?

a) 15
b) 12
c) 18

Card 11:
Start with 18. Multiply by 2 and then subtract 6 for the next number. What is the second number?

a) 30
b) 36
c) 24

Card 15:
Start with 24. Multiply by 2 and then subtract 8 for the next number. What is the second number?

a) 40
b) 48
c) 32

Card 12:
Begin with 50. Add 10 and then subtract 5 for the next number. What is the second number?

a) 45
b) 55
c) 60

Card 16:
Begin with 80. Subtract 10 and then divide by 2 for the next number. What is the second number?

a) 30
b) 35
c) 40

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Curriculum Connection
C1.4

Task Cards | Cut out the task cards below

Card 17:
Start with 90. Divide by 3 and then add 5 for the next number. What is the second number?

a) 30
b) 25
c) 35

Card 21:
Start with 48. Subtract 8 and then multiply by 2 for the next number. What is the second number?

a) 70
b) 80
c) 56

C[illegible]
Begin with 28[illegible] th[illegible]ubtract 5 for the n[illegible]er. Wh[illegible] secon[illegible]mbe[illegible]

a) 30
b) 35
c) 28

Card 22:
Begin with 52. Add 6 and then divide by 2 for the next number. What is the second number?

a) 25
b) 29
c) 28

Card 19:
Start with 50. Add 10 and then multiply by 3 to get the next number. What is the third number?

a) 315
b) 325
c) 330

C[illegible]3:
Sta[illegible]d then add 3 for the [illegible]ber. [illegible]s the second [illegible]umb[illegible]

a) [illegible]
b) 10
c) 11

Card 20:
Begin with 64. Divide by 8 and then add 7 for the next number. What is the second number?

a) 15
b) 14
c) 12

Card 24:
Begin with 45. Subtract 10 and then divide by 5 for the next number. What is the second number?

a) 5
b) 7
c) 8

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Curriculum Connection
C1.3

Types of Patterns

Steve deposits $5 a day into his bank account. He tracks this below.

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
						1
2	3	4	5	6	7	8
	10	11	12	13	14	15
		18	19	20	21	22
23			26	27	28	29
30						

PREVIEW

Questions Answer the quest[illegible]elow b[illegible]n at the calendar

1) How is this a repeating pattern?

2) How could this also be an increasing pattern?

3) After 13 days, how much money would Steve have?

4) After this month, how much money would Steve have?

5) If he started with $50 in his bank account, and then kept depositing $5 for 60 days, how much money would he have in total?

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Curriculum Connection
C1.3

Table of Values

Questions Answer the questions below by using the table of values

When you work an hour, you get paid 32 dollars. Fill in the table to learn more about your earnings.

1) How many dollars will you make if you work 5 hours?

2) How many dollars will you make if you work 10 hours?



Hours Worked	Money Made
1	
2	
3	
4	
5	
10	

Weeks	KM Ra
1	
2	
3	
4	
5	
10	

You are training for a marathon, so you run 42km a week.

1) How many kilometers did you run after 5 weeks?

2) How many kilometers did you run if you ran 42km for 10 weeks?

Chris is studying for a science test next week. Each night he studies for 45 minutes.

1) How many minutes does he study after 5 nights?

2) How many minutes does he study after 8 nights?

3) How many nights does he need to study for to study for 585 minutes?

Nights	Minutes
1	
2	
3	
4	
5	
8	

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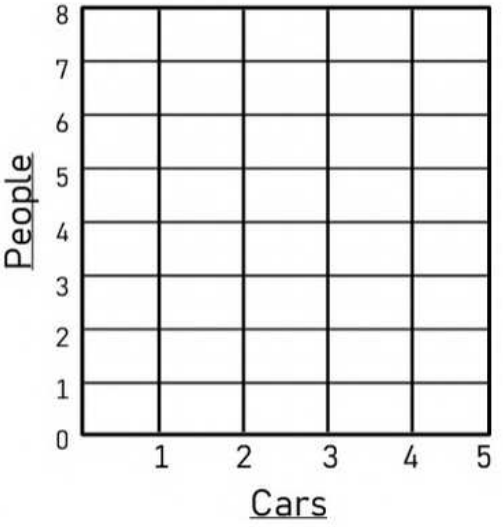
Curriculum Connection
C1.3

Graphing Patterns – Table of Values

Questions Translate the increasing patterns into a table of values and a graph

A train has the following people in each train car.





Term Number (Cars)	1	2		4	5	8
Term Value (People)						

1) What is the pattern rule? Start at ____, _____ th tim

2) How many people would be in train car 10?

3) Is the line on the graph straight or curved? Why do you think that is?

4) How many people would be in train car 20?

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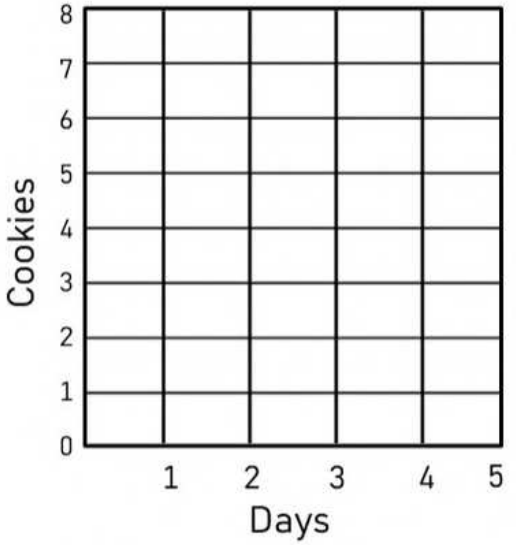
C1.3

Graphing Decreasing Patterns

Questions Translate each shrinking pattern into a table of values and a graph

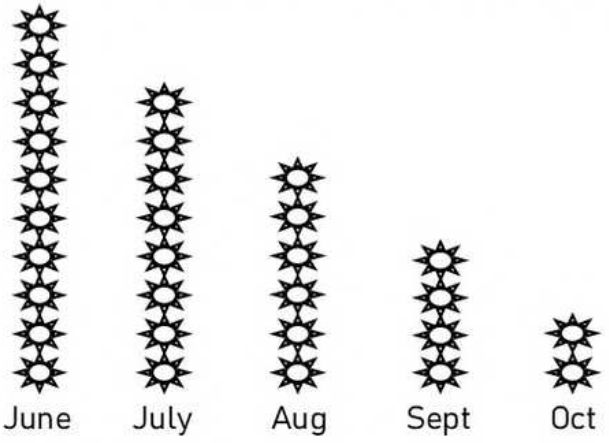
1) Kerry kept track of how many cookies she ate each day using addition signs.

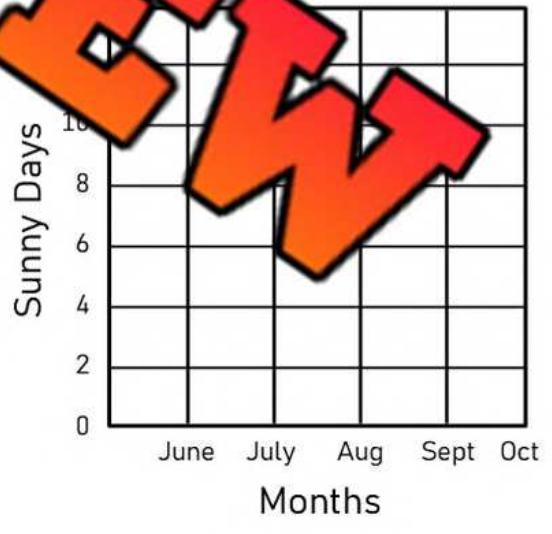




Term Number (Day)					
Term Value (Cookies)					

2) Ally writes down how many days it was sunny each month from June – November.





Term Number (Month)						November
Term Value (Sunny Days)						

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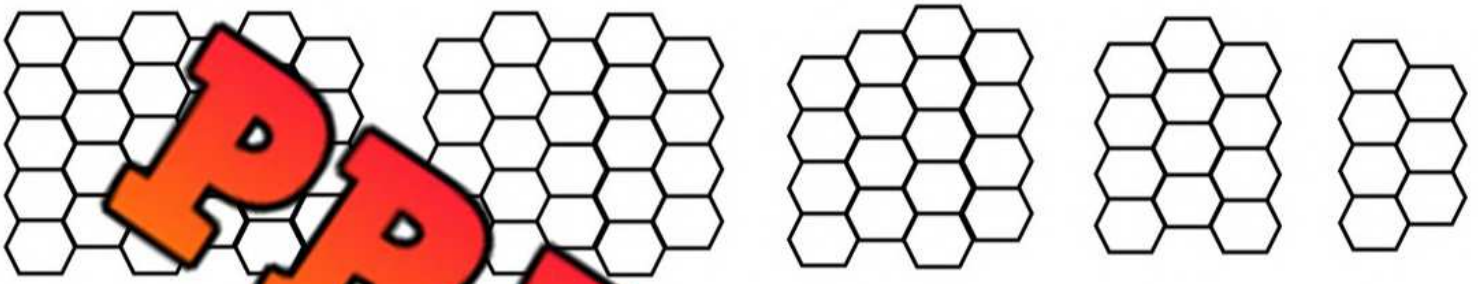
Curriculum Connection
C1.2, C1.3

Decreasing Pattern Challenge

Questions Answer the questions below using a table of values and a graph

Jill makes a pattern using hexagons. Translate the pattern using the graph and table of values.



Term Number	Term



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1) What is the pattern decreasing by each time?

2) Draw your own decreasing pattern below

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Curriculum Connection
C1.2, C1.3

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Answer the questions below by using the table of values.

When you complete a math worksheet, you earn 8 points. Fill in the table below to learn more about your point collection.

# of Worksheets	Points Earned
2	
4	
6	
8	
10	

Name: _____

Answer the questions below by using the table of values.

When you complete a math worksheet, you earn 8 points. Fill in the table below to learn more about your point collection.

# of Worksheets	Points Earned
2	
4	
6	
8	
10	

Name: _____

Answer the questions below by using the table of values.

When you complete a math worksheet, you earn 8 points. Fill in the table below to learn more about your point collection.

# of Worksheets	Points Earned
2	
4	
6	
8	
10	

Name: _____

Answer the questions below by using the table of values.

When you complete a math worksheet, you earn 8 points. Fill in the table below to learn more about your point collection.

# of Worksheets	Points Earned
2	
4	
6	
8	
10	

PREVIEW

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Curriculum Connection
C1.2, C1.3

Toothpick Linear Patterns

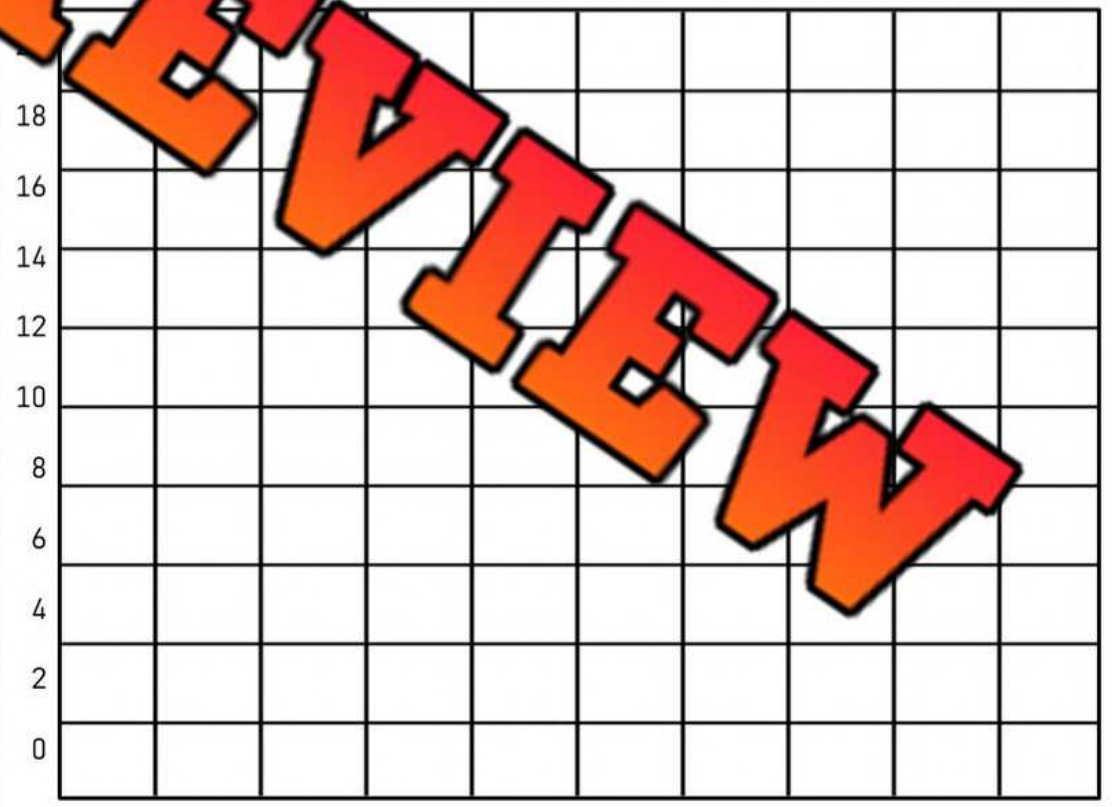
A **linear** pattern is a pattern that increases or decreases by a value that remains the same. Linear patterns can be plotted as a straight line on a graph.

Questions Answer the question below using a table of values and a graph

Kelly has made a pattern using toothpicks. She has displayed her pattern below.

				
Term 1	Term 2	Term 3	Term 4	Term 5

Term Number	Term Value



1) Why is this a linear pattern?

2) Extend the line on the graph. What will be the 7th and 10th term value?

7th term _____ 10th term _____

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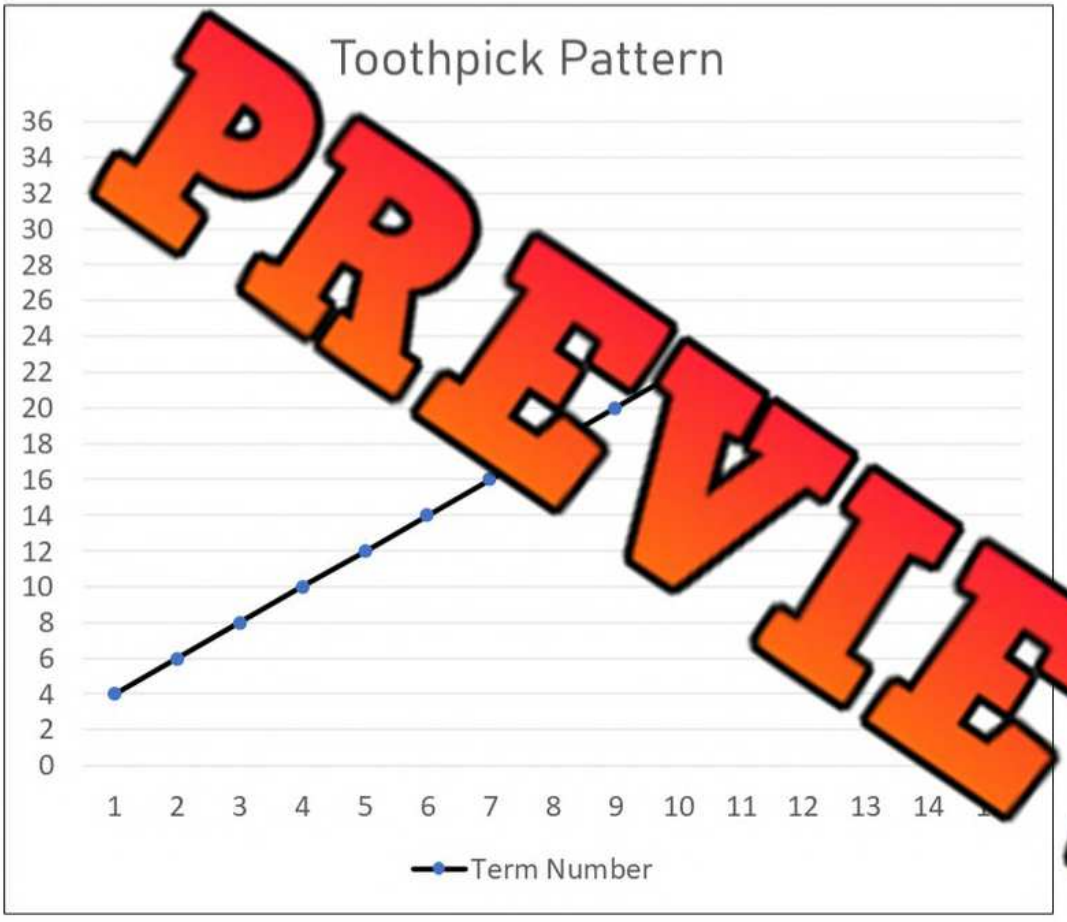
C1.1, C1.2

Reading a Linear Pattern - Graph

A **linear** pattern is a pattern that increases or decreases by a value that remains the same. Linear patterns can be plotted as a straight line on a graph.

Instruction Continue the line on the graph and fill in the table of values



Term Number	Term Value
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	

PREVIEW

1) Draw the toothpick pattern below for the graph/table of values. Use any design you'd like.

Term 1	Term 2	Term 3	Term 4	Term 5

2) Why is this graph a linear pattern?

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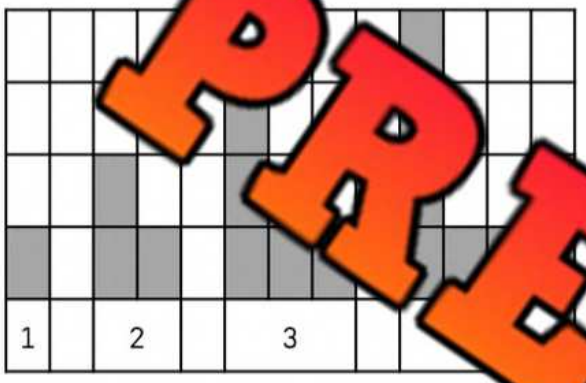
Curriculum Connection
C1.1, C1.2

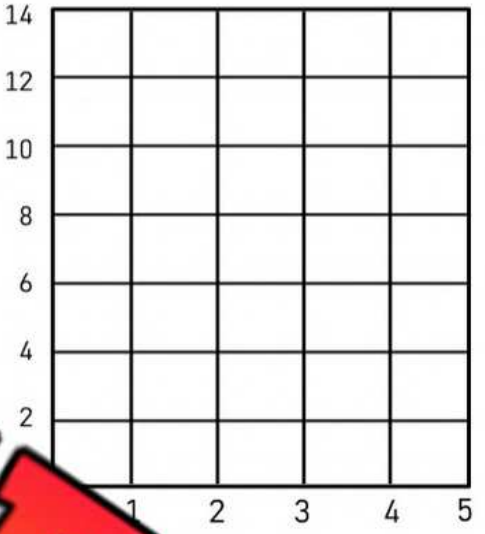
Linear and Non-Linear Patterns

Not all patterns are linear. Some patterns increase/decrease by the same amount each time, while others grow/shrink at different rates. When the pattern grows or shrinks by different amounts, it is called **non-linear.**

Instruction Look at the patterns below and fill in the table of values. Then complete the graph. Is the line straight?



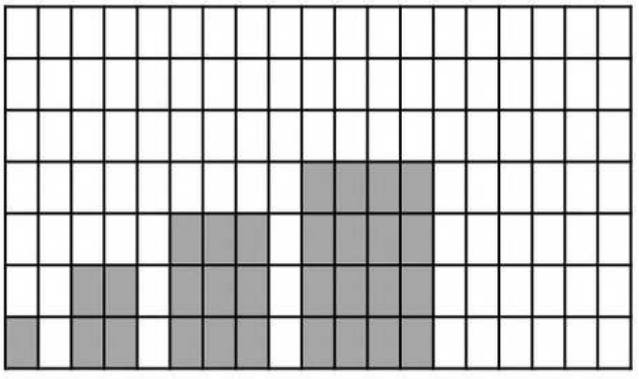
Term Number	Term Value
1	
2	
3	



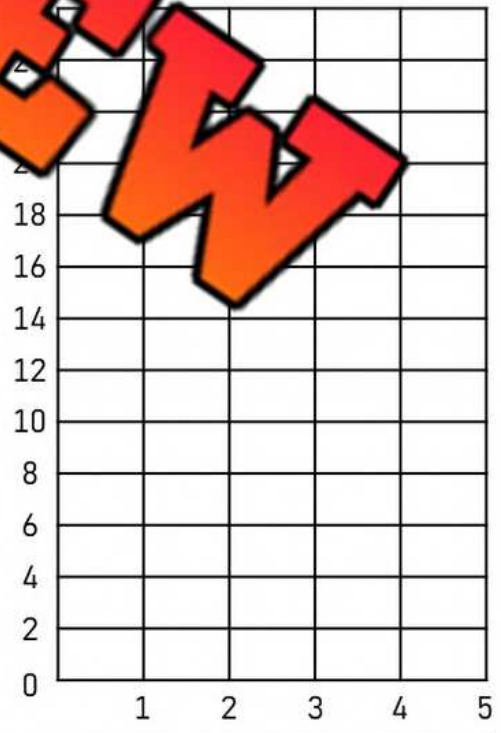
Is this pattern linear or non-linea ain.

_____

_____



Term Number	Term Value
1	
2	
3	
4	
5	



1) Is this pattern linear or non-linear? Explain.

_____

_____

2) How many blocks would be in term number 10?

PREVIEW

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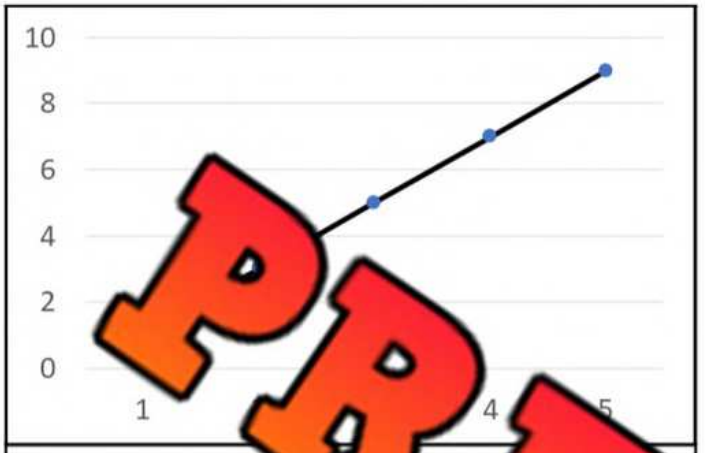
Name: _____ 61

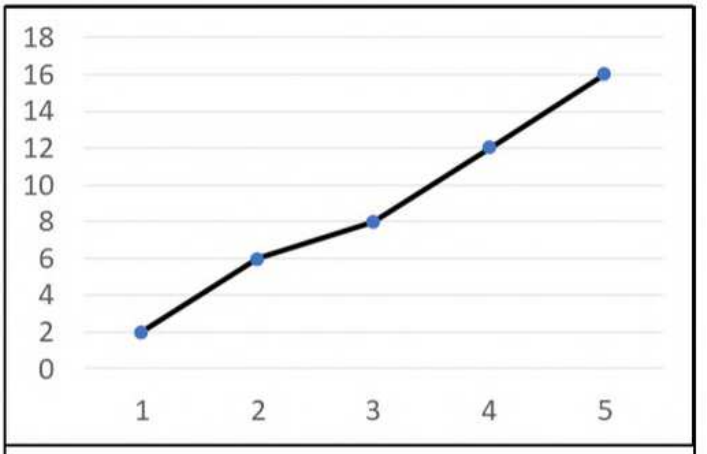
Curriculum Connection
C1.1

Increasing Linear Patterns – Yes or No?

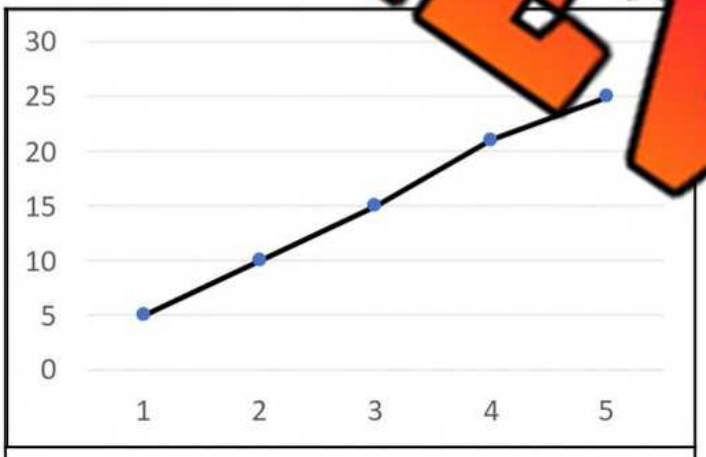
Questions | Circle if the pattern displayed on the graph is linear or not



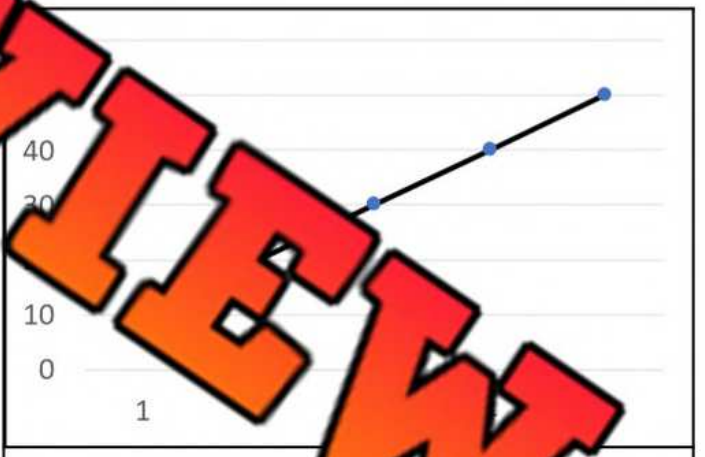
1) Linear Non-Linear



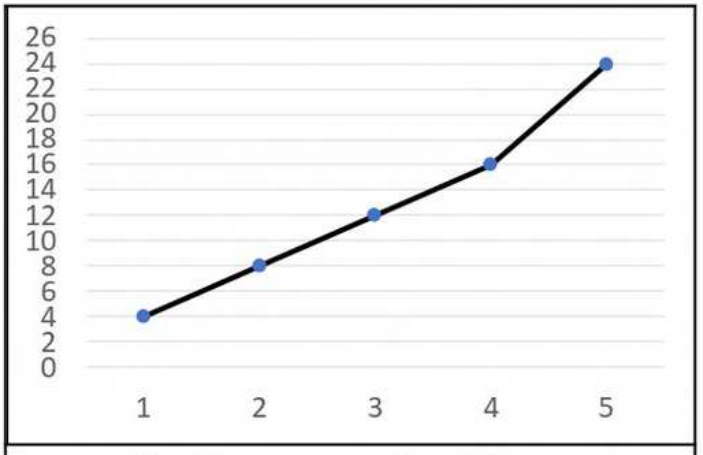
2) Linear Non-Linear



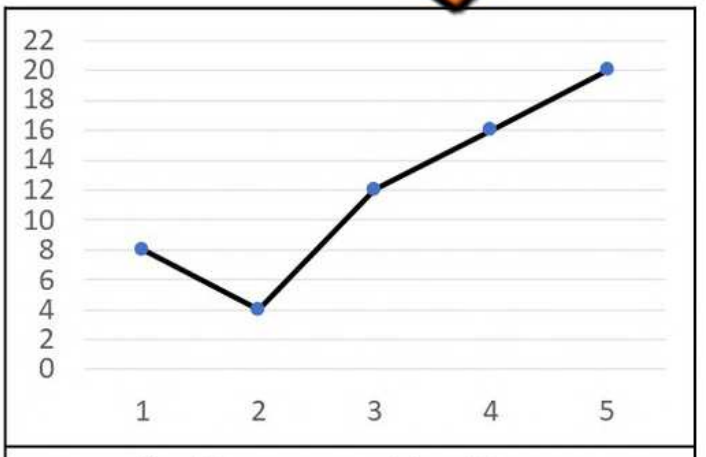
3) Linear Non-Linear



4) Linear



5) Linear Non-Linear



6) Linear Non-Linear

PREVIEW

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Name: _____ 63

Curriculum Connection
C1.1

Increasing Linear Patterns – Yes or No?

Questions Circle if the pattern is linear or not, based on the table of values

Term Number	Term Value
1	2
2	6
3	10
4	
5	
Linear	Non-Linear

Term Number	Term Value
1	10
2	16
3	20
4	26
5	32
Linear	Non-Linear

Term Number	Term Value
1	15
2	18
3	21
4	25
5	28
Linear	Non-Linear

Term Number	Term Value
1	14
2	19
3	24
4	29
5	34
Linear	Non-Linear

Term Number	Term Value
1	
2	
3	
4	60
5	74
Linear	Non-Linear

Term Number	Term Value
1	25
2	75
3	125
4	175
5	
Linear	Non-Linear

Term Number	Term Value
1	112
2	126
3	138
4	152
5	166
Linear	Non-Linear

Term Number	Term Value
1	210
2	260
3	310
4	360
5	410
Linear	Non-Linear

Term Number	Term Value
1	500
2	650
3	700
4	850
5	1000
Linear	Non-Linear

PREVIEW

Name: _____ 65

Curriculum Connection
C1.3

T-Tables – Finding Patterns

Questions | Fill in the T-Tables by counting the lines in each shape

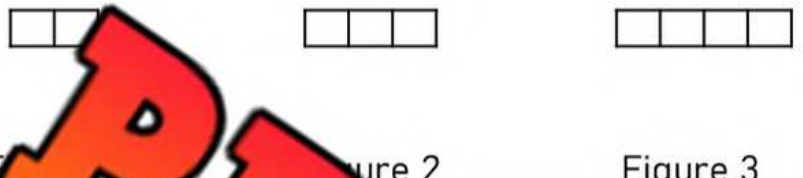
1) 
Figure 1 Figure 2 Figure 3

Figure	Lines
1	7
2	
3	
4	

2) 
Figure 1 Figure 2 Figure 3

Figure	Lines
1	
2	
3	
5	

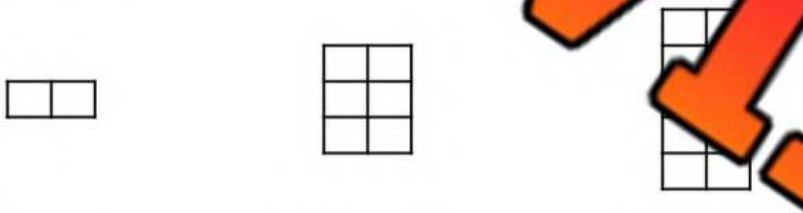
3) 
Figure 1 Figure 2 Figure 3

Figure	Lines
3	
6	

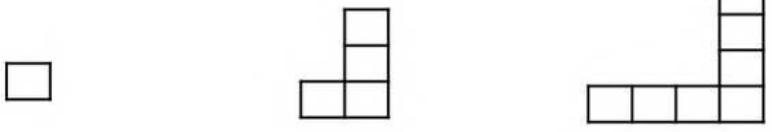
4) 
Figure 1 Figure 2 Figure 3

Figure	Lines
1	
2	
3	
8	

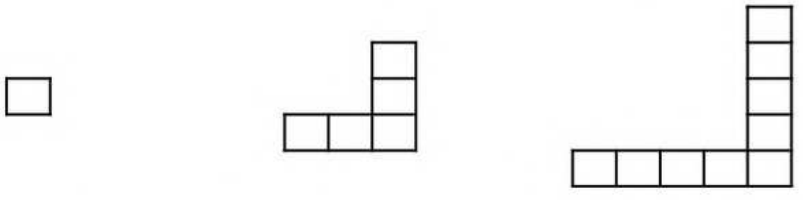
5) 
Figure 1 Figure 2 Figure 3

Figure	Lines
1	
2	
3	
10	

PREVIEW

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Curriculum Connection
C1.3

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

a) Draw the next figure.



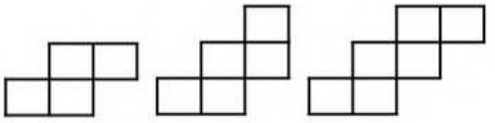
b) Write the algebraic expression

c) Write the number of lines that represents the figure sequence.

Figure	Lines
1	_____
4	_____
8	_____

Name: _____

a) Draw the next figure.



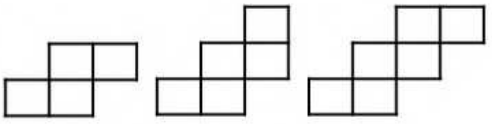
b) Write the algebraic expression

c) Write the number of lines that represents the figure sequence.

Figure	Lines
1	_____
4	_____
8	_____

Name: _____

a) Draw the next figure.



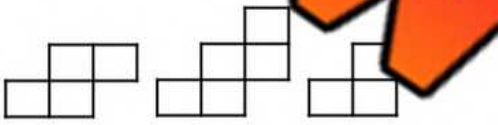
b) Write the algebraic expression

c) Write the number of lines that represents the figure sequence.

Figure	Lines
1	_____
4	_____
8	_____

Name: _____

a) Draw the next figure.



b) Write the algebraic expression

c) Write the number of lines that represents the figure sequence.

Figure	Lines
1	_____
4	_____
8	_____

PREVIEW

Name: _____ 68

Curriculum Connection
C1.3

Patterning Word Problems - Blocks

Challenge Answer the problems below

Matt is building a structure using blocks. The construction of his structure will be completed in 5 phases.

a) Matt decided to add the same number of blocks during each of the 5 phases. He ha[illegible] different design ideas. Fill in the tables below.

Pha[illegible]	[illegible]
[illegible]	[illegible]
2	[illegible]
3	[illegible]
4	22
5	[illegible]

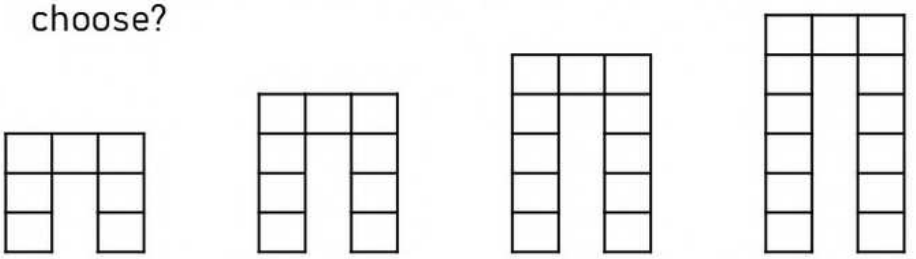
Phases	Blocks
1	[illegible]
2	12
3	[illegible]
4	[illegible]
5	27

Phases	Blocks
1	8
2	[illegible]
3	[illegible]
4	[illegible]
5	36

b) Whoops, Matt made a mistake when he co[illegible]ted h[illegible]ble. His structure was supposed to add the same number[illegible]cks d[illegible] phase. Find his error and correct it.

Phases	1	2	3	[illegible]	[illegible]
Blocks	12	17	21	[illegible]	[illegible]

c) You want to build a house out of blocks, but each block costs $6. [illegible]u have created 4 different design plans. You have $70 to spend. Which design will you choose?



Design	Blocks	$
1		
2		
3		
4		

_____

_____

PREVIEW

Name: _____ 69

Curriculum Connection
C1.3

Table of Values – Finding Term N

When finding a random term in a pattern, we can use a variable. Often *n* is used to take the place of the term number. When we use *n*, we can change the value to find the term value for any term number.

We can find the value for *n* by looking at the pattern between the term number and term value. To do this, we look across the table from the term number to the term value.

Practice Find the pattern rule when you look across the table of values

Term Number	Term Value
1	3
2	4
3	5
4	6
5	7
8	

n + 2

Term Number	Term Value
1	3
2	5
3	7
4	9
5	
9	

n x 2 + 1 or 2n + 1

Term Number	Term Value
1	5
2	10
3	15
4	20
5	25

_____

Term Number	Term Value
1	4
2	7
3	10
4	13
5	16
11	

_____

Term Number	Term Value
1	4
2	6
3	8
4	10
5	12
11	

_____

Term Number	Term Value
10	4
15	9
20	14
25	19
30	24
50	

_____

PREVIEW

Name: _____ 70

Curriculum Connection
C1.3

Table of Values – Finding Term N

Practice Find the pattern rule when you look across the table of values

Term Number	Term Value
1	8
2	13
3	18
4	23
5	
8	

_____

Term Number	Term Value
1	14
2	15
3	16
4	17
5	18

_____

Term Number	Term Value
1	9
2	19
3	29
4	39
5	49
11	

_____

Term Number	Term Value
1	7
2	11
3	15
4	19
5	23
11	

_____

Term Number	Term Value
1	
2	
3	21
4	28
5	35
11	

_____

Term Number	Term Value
1	16
2	22
3	28
4	
5	40
11	

_____

PREVIEW

Word Problem Use a table of values and find the nth term

Joe goes out looking for shells on a beach. He records how many shells he finds each day. He found 10 shells the first day, 20 shells the second day, 30 the third day, and 40 the fourth day. How many will he find on the 30th day if the pattern continues.

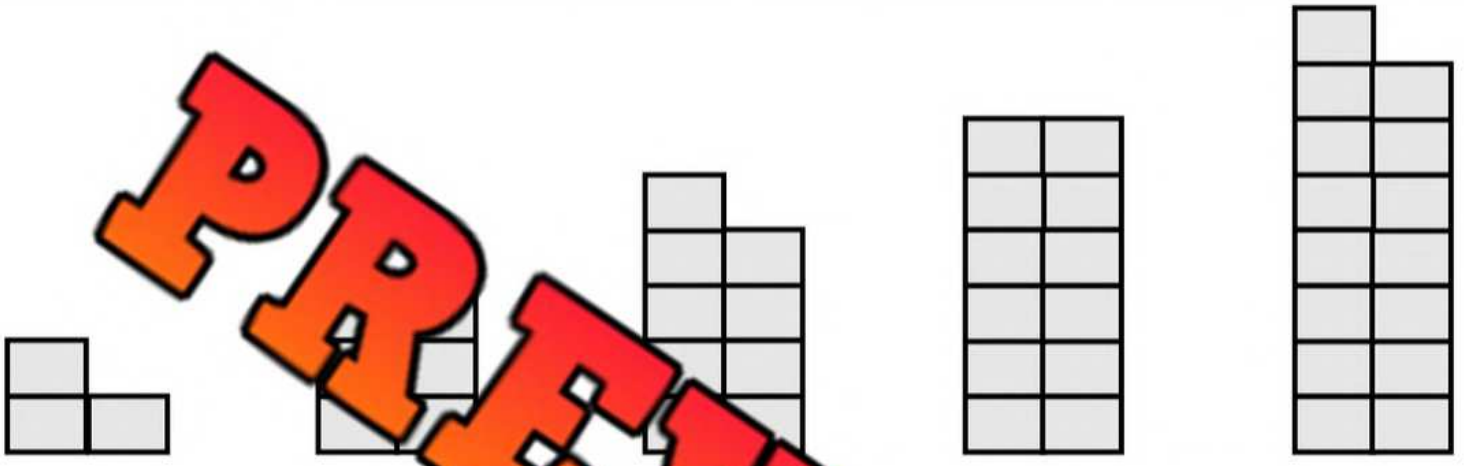
Name: _____ 74

Curriculum Connection
C1.2, C1.3

Growing Pattern Challenge

Questions Answer the question below using a table of values and a graph

Joel has created a pattern using his blocks. Translate the pattern using the table of values and graph.



PREVIEW

Term Number	Term Value

1) How many blocks would Joel use in his 10th shape if he continued his pattern?

2) Write an expression that represents the function

3) Which shape would use 63 blocks?

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Name: _____ 75

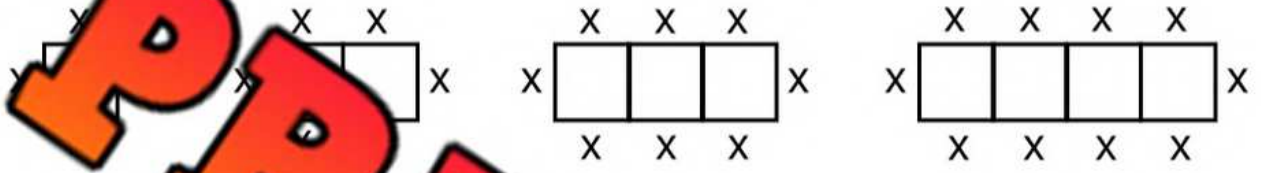
Curriculum Connection
C1.3

Picnic Word Problem – T-Tables

Challenge Answer the word problem below. Use the T-Table to help.

You have been put in charge of organizing the end of the year banquet for your baseball team. You want to have as many seats as you can.

The diagram below shows how many people can sit at the tables.



a) Fill in the t-table to learn the pattern of how many people can attend the banquet.

Tables	1			4	5
# of Seats					

b) Write an algebraic expression that represents the pattern.

c) How many people could you seat if you had...

i) 10 tables: _____

ii) 15 tables: _____

d) What if you didn't put the tables together? Would 8 tables together fit more or less than 8 tables apart?

PREVIEW

Name: _____ 76

Curriculum Connection
C1.2, C1.3

Basketball Skills Challenge



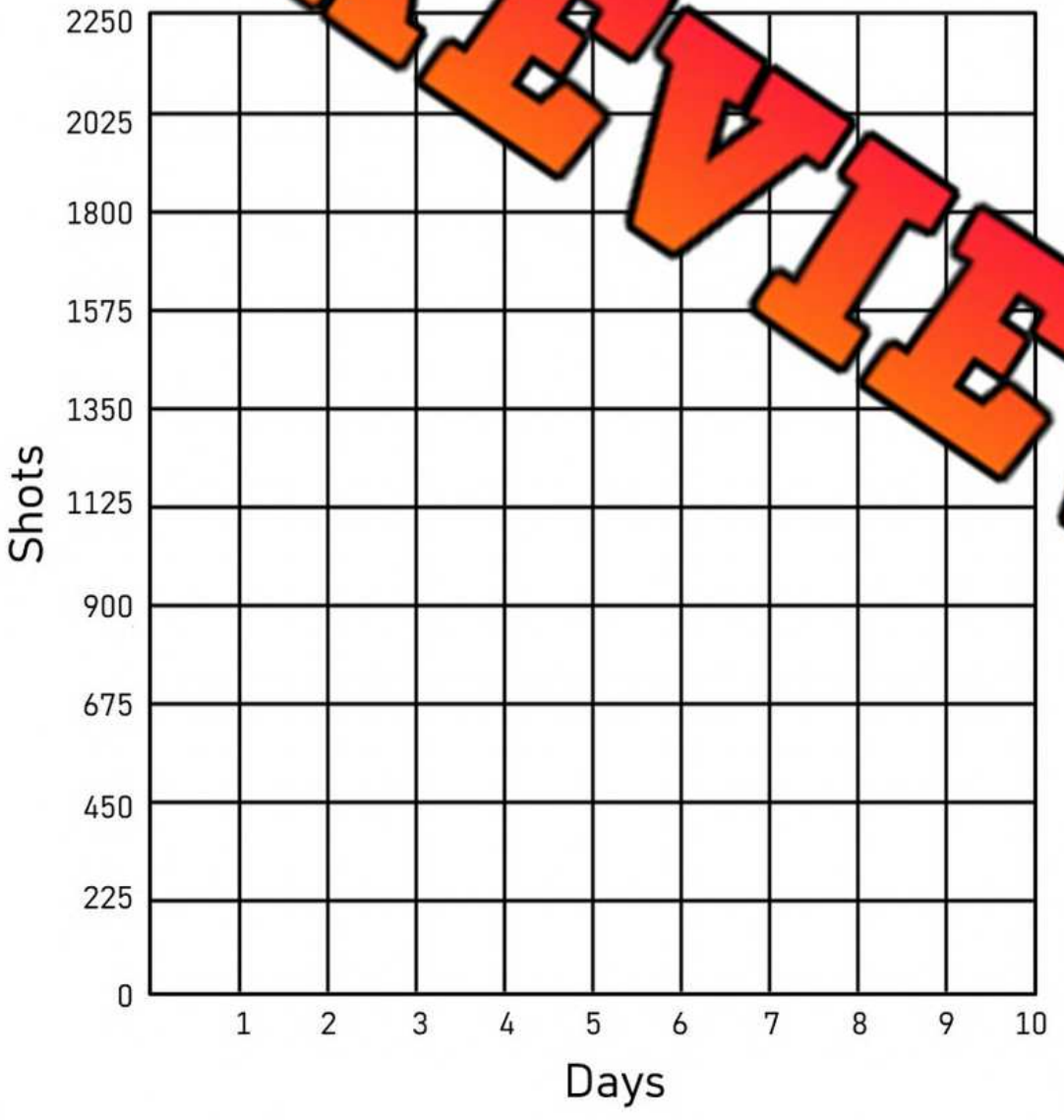
Instructions Complete the table of values and graph the results

Connor is practicing his shooting skills in basketball. He decides to take 225 shots each day for 10 days.

Term Number (Day)	1	2	3	4	5	6	7	8	9	10
Term Value (Shots)										

Function – [illegible]

PREVIEW



Questions

1. Which day did Connor finish 1500 shots?

_____

2. [illegible] many shots [illegible]nnor take in [illegible]

_____

3. If his friend took 300 shots for 7 days, who would have taken more? Explain.

_____

_____

_____

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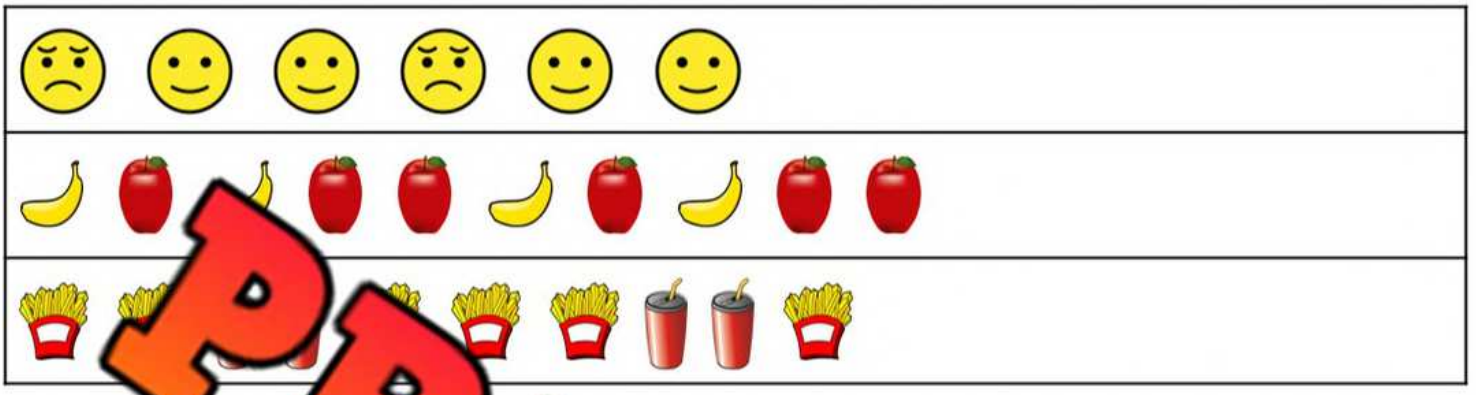
Name: _____ 78

Algebra Quiz - Patterning

Part 1 Continue the pattern and circle the pattern core

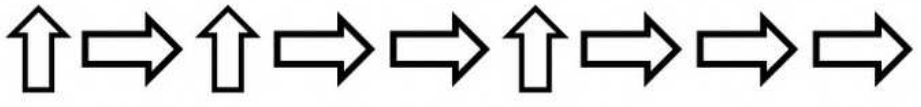


Part 2 [illegible] patterns using shapes, numbers, or letters

1)	A		B		A	A	B	B
Translated								

2)	A	B	C	C	A		C	C
Translated								

Part 3 Continue the growing and shrinking patterns below

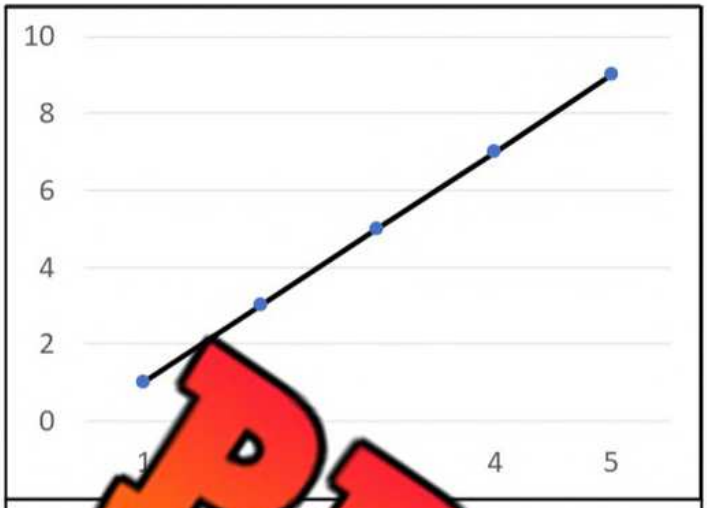
1) 

2) 

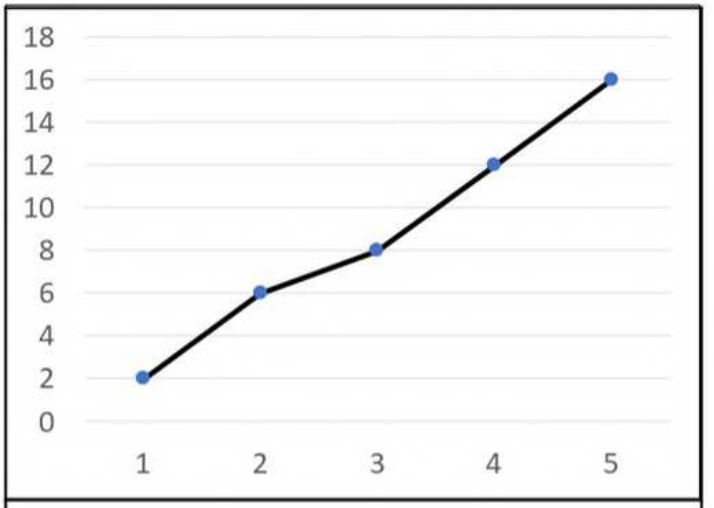
3) 

PREVIEW

Part 4 — Circle if the pattern displayed on the graph is linear or not



...ear	...ear



Linear	Non-Linear

PREVIEW

Part 5 — ...the in... tables below

Subtract by ...	
In	**Out**
41	
83	
	104
	124

Rule: Add 13	
	Out
143	

Rule: Divide by 2	
In	**Out**
215	
233	
268	
291	

Rule: Multiply by 5	
In	**Out**
7	
13	
	105
	145

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Part 6 Answer the word problem below

Steven wants to buy a new gaming system that is on sale for $386. The sale will end in 6 days. He has $50 saved already and can make $8 an hour for cutting grass.

a) How much more money does he need to have enough to buy the gaming system?

b) How many hours does he need to work to save enough money to buy the gaming system?

c) How many hours should he work each day to make sure he can buy the gaming system within the next 6 days?

d) He can cut 2 yards in each hour. How many yards will he cut to have enough money?

e) Steven's parents decided to give him $120 extra dollars for his gaming system. How many hours will he need to work now?

PREVIEW

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Grade 6
C2. Equations and Inequalities

	Curriculum Expectations	Pages That Cover the Expectations
C2.1	add monomials with a degree of 1 that involve whole numbers, using tools	158 - 159
C2.2	evaluate algebraic expressions that involve whole numbers and decimal tenths	150, 154 – 157
C2.3	solve equations that involve multiple terms and whole numbers in various contexts, and verify solutions	82 – 149, 151 - 153
C2.4	solve inequalities that involve two operations and whole numbers up to 100, and verify and graph the solutions	161 - 173

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Name: _____ 82

Curriculum Connection
C2.3

Addition – Are They Equal?

Are the equations equal? Put a slash through the equal sign for any equations that are not equal.

8 + 4 = 12 23 + 15 ≠ 36 47 + 13 = 50

Instructions Put a slash through the equal sign (≠) if it is not balanced

[illegible]	2) 43 + 10 = 63	3) 41 + 13 = 55
4) 58 + 12 = 60	5) [illegible] = 77	6) 82 + 15 = 98
7) 92 + 5 = 97	8) [illegible] + 13 = [illegible]	9) 114 + 7 = 122
10) 125 + 15 = 150	11) 137 + 11 = 149	12) [illegible]
13) 12 + 144 = 158	14) 171 + 14 = 185	15) 166 + 20 = 186
16) 192 + 8 = 200	17) 180 + 13 = 193	18) 155 + 26 = 181
19) 210 + 50 = 250	20) 212 + 12 = 224	21) 255 + 40 = 285

PREVIEW

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Name: _____ 83

Curriculum Connection
C2.3

Pre-Algebra – Balancing Addition Equations

Balancing equations means both sides of the equal sign must be the same.

Examples:

$37 + 15 = \boxed{52}$ (52)

$46 + 32 = \boxed{78}$ (78)

Instructions Fill in the missing number to balance the equation

1) 44 + ☐ =	2) 53 + 9 = ☐	3) 67 + 12 = ☐
4) 15 + ☐ = 30	5) 48 + ☐ = 57	6) 68 + ☐ = 81
7) ☐ + 12 = 95	8) ☐ + 25 =	☐ + 59 = 66
10) 72 + 14 = ☐	11) 64 + ☐ = 80	☐ = 65
13) 68 + ☐ = 82	14) 83 + 15 = ☐	15) 89 + ☐ = 102
16) 105 + ☐ = 116	17) 121 + 14 = ☐	18) 145 + ☐ = 160
19) 177 + ☐ = 198	20) 215 + 41 = ☐	21) 217 + ☐ = 229

PREVIEW

Name: _____ 85

Curriculum Connection
C2.3

Activity – Math Hot Seat: Addition Challenge

Objective What are we learning about?

Students will practice solving addition problems to find unknown values by participating in a fun and interactive game, enhancing their arithmetic skills and quick thinking.



Material What you will need for the activity.

- Index cards with addition problems
- Chairs arranged in a circle
- Stopwatch or timer
- Whiteboard and marker

Instructions How you will complete the activity.

1. Prepare a stack of index cards with various addition problems. Ensure some problems require finding a missing number.
2. Arrange chairs in a circle with one "hot seat" in the center.
3. Explain the rules of the game to the students. One student will sit in the hot seat while the rest sit in the surrounding chairs.
4. The teacher will read an addition problem from the stack. The student in the hot seat has a limited time (e.g., 30 seconds) to solve the problem.
5. If the student in the hot seat answers correctly within the time limit, they stay in the hot seat for the next round. If they answer incorrectly or run out of time, they switch places with another student from the circle.
6. Continue the game until each student has had the opportunity to sit in the hot seat multiple times, or until the designated game time is up.
7. Keep track of the number of correct answers each student provides while in the hot seat. The student with the most correct answers at the end of the game wins.

PREVIEW

Name: _____ 87

Curriculum Connection
C2.3

The pet store sold 19 dogs and 13 cats. What was the total number of animals sold?
78 + o = 135
p + 32 = 96
56 + q = 112
The school choir performed at 3 different events. At the first event, they sang 27 songs. At the second event, they sang 19 songs. At the third event, they sang 14 songs. What was the total number of songs the choir sang?
28 + x + 14 = 87
y + 36 + 19 = 104
42 + z - 16 = 75
a + 63 - 27 = 91
The school libr 84 fic s and 57 non-fiction books. They received 23 more fiction books 19 n books. How many books does the library have now?
b +
79 84 = 1
d + 16 + 2
The art classroom had 62 colored pencils and 4 They ed 31 more colored pencils and 24 more markers. How many a s do have now?
e + 72 - 19 = 118
93 + f + 11 = 159
g + 54 - 23 = 86
h + 82 + 21 = 139
115 + i - 43 = 172
j + 39 + 28 = 102
The school band had 76 trumpets and 54 trombones. They received 29 more trumpets and 18 more trombones. How many instruments do they have now?
k + 67 - 31 = 124
131 + l + 22 = 203

PREVIEW

Name: _____ 91

Curriculum Connection
C2.3

Equation Pairs - Addition

When we add numbers or variables (letters) together, we can change the order of the numbers/letters without affecting the answer. This is called the **communitive property.**

Directions: Isaac works at a fast-food truck. He sells burgers (b) and fries (f). His job is to calculate how much the customer owes in total (t) for their order.

Instructi Write 2 equations for the orders below



PREVIEW

#	Fri	ur	Equation 1 (f + b = t)	Equation 2 (b + f = t)
1	3		3 + 8 = 11	8 + 3 = 11
2	5	4		
3	3	6		
4	7	8		
5	5	9		
6	7	6		
7	3	4		
8	5	7		
9	7	9		
10	5	8		

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Name: _____ 93

Curriculum Connection
C2.3

Writing Addition Equations – Candy Shop

Alice works at a candy shop. She sells suckers (s), gum (g), and chocolate bars (b). Her job is to calculate how much their order costs (c).

Instructions Write the equation and find the answer



#	Customers Order ($)	Equation	Answer
1	g = 5 s = 9	c = g + b + s c = 5 + 8 + 9	22
2	g = b =		
3	g = 7 s = 15		
4	g = 9 b = 8 s = 5		
5	b = 15 s = 12		
6	g = 31 b = 16		
7	g = 24 b = 18 s = 16		
8	g = 38 s = 24		

PREVIEW

Name: _____ 94

Curriculum Connection
C2.3

Word Problems – Writing Addition Equations

Instructions Answer the questions below

1) Alex and Ryan had 37 points together in a basketball game. Ryan had 21 points. Which equation will tell us how many points Alex had?



a + 21 = 37	37 + 21 = a
21 + a = 37	21 – a = 37

2) B[illegible] $75 together at work. Bruce can't remember how much he mad[illegible]ut Ha[illegible]e made $39. Which equation will tell us how much Bruce made?



[illegible] + 39 [illegible]	39 + b = 75
39 [illegible] = [illegible]	75 + 39 = b

3) Mary and Brianna found 121 easte[illegible]oget[illegible] Mary found 65. Which equation will tell us how many Brian[illegible]und?



121 + b = 65	65 [illegible]
b + 65 = 121	[illegible] 65

4) Brad scored 38 points in a basketball game. He had 12 point[illegible]. Which equation will tell us how many points he had in the secon[illegible]ha[illegible]



p + 38 = 12	38 + 12 = p
38 + p = 12	12 + p = 38

5) It snowed 31cm in two days. The first day it snowed 14cm. Which equation will tell us how much it snowed the second day?



s + 14 = 31	31 + 14 = s
14 + s = 31	31 + s = 14

PREVIEW

Name: _____ 95

Curriculum Connection
C2.3

Word Problems – Solving Addition Equations

Questions | Write the algebraic equations and answer the question

1) Tim drove 138km to get to work. Then he drove to the store. When he got to the store, he had driven 195 km in total. How many km did he drive to the store (s)?



2) Steve [illegible]ts for beating level 1 in a video game. He got 68 more points for b[illegible] 2 [illegible]many total points (t) did he have after level 2?

Bonus – He ha[illegible]al poi[illegible] beating level 3. How many points did he get in level 3 (L)?



3) The Lakers scored 122 tota[illegible]oints [illegible]a[illegible]st the Toronto Raptors. Kobe Bryant had 81 points for the Lakers. [illegible]many p[illegible]p) did the rest of the team have?



4) Jessica's boat can hold a whopping 200 litres of gas. She we[illegible] a full tank. When she docked the boat after she was done, the ta[illegible]es left. How many litres (l) did she use?



5) Becca had $187 in her bank account. She deposited some more money after she babysat for a summer. Now she has $410. How much money (m) did she make babysitting?



PREVIEW

Name: _____ 97

Curriculum Connection
C2.3

Math Basketball: Addition Equations Challenge

Objective What are we learning about?

To reinforce students' understanding and application of addition through engaging word problems and a fun basketball shooting game.



Materials What you will need for the activity.

- S[illegible]ball (e.g[illegible]m ball)
- Trash can or [illegible] serve as the hoop
- Index card[illegible] with [illegible] word problems
- Marker or pe[illegible]
- Timer or stopwa[illegible]

Instructions How you will [illegible]mple[illegible]t

1. Divide the class into small groups of four to [illegible]tude[illegible]
2. Set up each group behind a desk with a st[illegible] ma[illegible] recording sheet, several recycled paper balls, and a trash [illegible]ed abo[illegible]eet away.
3. Have each group line up behind their desk.
4. When the teacher says “go,” the first student in each group p[illegible]tion and writes the answer on the recording sheet.
5. After answering, the student shoots a paper ball into the trash can.
6. They record whether their shot was a basket or not on the sheet.
7. Then the next person in line repeats the process.
8. Continue until all questions have been answered.
9. After the activity, the class goes over the correct answers together.
10. Each group earns one point for every correct answer and one point for each successful basket.
11. The team with the most total points wins the game.

PREVIEW

Name: _____ 98

Curriculum Connection
C2.3

Index Cards | Use the following table for the game.

1	Maria has 24 apples in total. She picked 10 apples from one tree and 8 apples from another. How many apples did she pick from the third tree (a)?
2	Jason collected 50 marbles in total. He found 20 marbles in the park and 15 marbles at home. How many marbles did he find at school (m)?
3	Em[illegible] 90 pages of her book in total. She read 40 pages on Monday and 30 [illegible] Tuesday. How many pages did she read on Wednesday (p)?
4	[illegible]el has [illegible]s in total. He received 20 toy cars for his birthday and 25 toy [illegible] fri[illegible] How many toy cars did he already have (c)?
5	Sarah saw 5[illegible]ds i[illegible] saw 20 sparrows and 15 robins. How many pigeons did [illegible]ee (b)?
6	Liam built 100 Lego str[illegible]ures [illegible] 30 houses and 40 cars. How many towers did he build (t)?
7	Olivia has 25 books. She has 10 novel[illegible] co[illegible] How many picture books does she have (p)?
8	Noah drew 75 pictures in total. He drew 30 lands[illegible] an[illegible] How many animal pictures did he draw (a)?
9	Ava has 10 school supplies. She has 5 pencils and 2 pens. How[illegible]ny erasers does she have (e)?
10	James collected 200 stamps in total. He collected 120 stamps from his travels and 50 stamps from friends. How many stamps did he buy (s)?
11	Mia baked 80 cookies. She baked 30 chocolate chip cookies and 20 oatmeal cookies. How many sugar cookies did she bake (c)?
12	Ethan has 150 toy soldiers in total. He has 70 green soldiers and 50 red soldiers. How many blue soldiers does he have (b)?

PREVIEW

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Curriculum Connection
C2.3

Index Cards | Use the following table for the game.

13	Emma has 40 stickers in total. She received 15 stickers from her friend and 10 stickers from her teacher. How many stickers did she already have (s)?
14	Lucas collected 100 seashells in total. He found 40 seashells on the beach and 35 seashells in the sand. How many seashells did he find in the water (w)?
15	built 60 sandcastles in total. She built 20 sandcastles on Monday castles on Tuesday. How many sandcastles did she build on
16	Jack h ain in total. He got 10 toy trains for Christmas and 12 toy t is bir How many toy trains did he already have (t)?
17	Ella saw 70 ne z saw 25 monkeys and 20 lions. How many giraffes d e (a)?
18	Ryan has 90 blocks. He has block 40 blue blocks. How many green blocks does he have (
19	Lily has 50 crayons. She has 20 red ons 5 ayons. How many yellow crayons does she have (c)?
20	Oliver drew 80 pictures in total. He drew 30 ani ts a s many houses did he draw (h)?
21	Chloe has 20 balloons. She has 8 red balloons and 5 blue b oons. How many yellow balloons does she have (b)?
22	Mason collected 120 baseball cards in total. He got 50 cards from his dad and 40 cards from his friend. How many cards did he already have (c)?
23	Grace read 150 pages in total. She read 60 pages in the morning and 50 pages in the afternoon. How many pages did she read at night (p)?
24	Benjamin has 70 cars. He has 30 toy cars and 25 model cars. How many remote control cars does he have (r)?

PREVIEW

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Curriculum Connection
C2.3

Recording Sheet

Instructions Write your answers below

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

13	
14	
15	
16	
17	
18	
19	
21	
23	
24	

PREVIEW

Tally Chart Record your made baskets by adding a tally for ea[illegible]nake

Number of Correct Answers	
Number of Made Baskets	
Total Score	

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Curriculum Connection
C2.3

Subtraction – Are They Equal?

Are the equations equal? Put a slash through the equal sign for any equations that are not equal

16 - 8 = 8 95 - 11 ≠ 86 105 - 12 = 93

Instructi Put a slash through the equal sign (≠) if it is not balanced

PREVIEW

[illegible] - 6 =	2) 46 - 4 = 42	3) 57 - 6 = 51
4) 68 - 10 = 57	5) [illegible] 57	6) 75 - 13 = 63
7) 84 - 14 = 70	8) 92 - 16 = [illegible]	[illegible] 108 - 12 = 95
10) 135 - 15 = 110	11) 126 - 20 = 109	12) [illegible]
13) 168 - 22 = 144	14) 174 - 13 = 161	15) 157 - 16 = 142
16) 189 - 0 = 0	17) 192 - 11 = 180	18) 181 - 15 = 166
19) 195 - 30 = 165	20) 197 - 16 = 182	21) 171 - 26 = 155

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Curriculum Connection
C2.3

Pre-Algebra – Balancing Subtraction Equations

Balancing equations means both sides of the equal sign must be the same.

Examples

$54 \overset{48}{\wedge} - 6 = \boxed{48}$

$72 \overset{57}{\wedge} - 15 = \boxed{57}$

Instructi Fill in the missing number to balance the equation

PREVIEW

1) 36 – ☐ =	2) 53 – 7 = ☐	3) 44 – 5 = ☐
4) 58 – ☐ = 45	5) 8 – ☐ = 39	6) 65 – ☐ = 55
7) ☐ – 5 = 52	8) ☐ – 3 =	☐ – 7 = 71
10) 83 – 11 = ☐	11) 91 – ☐ = 75	12) ☐
13) 105 – ☐ = 99	14) 112 – 9 = ☐	15) 122 – ☐ = 111
16) 132 – ☐ = 119	17) 146 – 15 = ☐	18) 158 – ☐ = 136
19) 173 – ☐ = 164	20) 185 – 17 = ☐	21) 197 – ☐ = 182

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Curriculum Connection
C2.3

Subtraction – Find the Variable

A **variable** is a letter that represents an unknown number. When we don't know a number, we can use a letter to take the place of the unknown number.

Example: 39 – n = 25

We can figure out the unknown number by balancing the equation. In this equation, n = 14.



Part 1 Find out the value of the variable

n =	2) n – 15 = 20 n =	3) 47 – n = 35 n =
4) 68 – 16 p =	– p = 53	6) p – 16 = 50 p =
7) 76 – y = 61 y =	8) = 0 y =	9) 92 – 13 = y y =
10) 105 – t = 91 t =	11) 114 – 1 t =	31 – t = 119 =
13) 153 – a = 137 a =	14) 168 – a = 145 a =	15

PREVIEW

Part 2 Calculate the change a customer gets when they buy something

When a customer buys something, the formula for calculating their change (c) is money given (m) subtract the price (p) of the item. Therefore, c = m – p

m = 20 p = 15	c = 20 – 15	c = 5
m = 30 p = 19	c = ___ – ___	c =
m = 50 p = 27	c = ___ – ___	c =

m = 60 p = 51	c = ___ – ___	c =
m = 100 p = 77	c = ___ – ___	c =
m = 100 p = 61	c = ___ – ___	c =

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Curriculum Connection
C2.3

Subtracting Decimals – Solve the Variable



Practice Find the value of the variables below

1) 6.5 – n = 3 n =	2) n – 2.5 = 4 n =	3) s – 3.2 = 2 s =
4) [illegible] = p	5) 9.1 – p = 7 p =	6) 12.1 – r = 10.5 r =
7) 16.3 [illegible] n =	[illegible] n – 3.5 = 11.5 n =	9) t – 4.4 = 15 t =
10) 22.7 – n = 20.1 n =	11) [illegible] t	12) 34.6 – 6 = p p =
13) 47.6 – n = 44.4 n =	14) 58.8 – [illegible].4 n =	[illegible]67.2 – s = 62.4 s =
16) 75.5 – s = 71.4 s =	17) 88.4 – 2.3 = s s =	18) [illegible]

PREVIEW

Word Problem Solve the questions below

1) Zara has 1.5 birthday cakes leftover from her party. She eats some the next morning and now there is only 0.9 of the cake left. How much did she eat?

2) Randy works for 7.5 hours today. He only has 2 hours left to work. How much time has elapsed?

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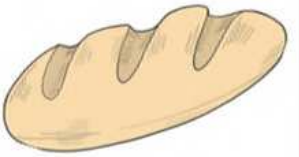
Curriculum Connection
C2.3

Writing Subtraction Equations - Bakery

Alice works at a bakery. Her job is to provide change (c) to customers when they pay for their baked goods (g). She must subtract their order from their payment (p).



Instructions Write the equations and find the answer

#	Payment	Baked Goods	Equation	Answer
1	50	32	c = p - g c = 50 - 32	c = 18
2	80			
3	100	72		
4	120	103		
5	100	86		
6	150	94		
7	200	118		
8	150	137		

PREVIEW

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Curriculum Connection
C2.3

Word Problems – Writing Subtraction Equations

Questions Answer the questions below

1) Harry bought 24 donuts. Him and a friend ate 9 of them. Which equation will tell us how many donuts there are left?



d - 9 = 24	24 - 9 = d
d – 24 = 9	24 - d = 9

2) St[illegible] doing [illegible]on challenge. She needs to run 42km in 5 days. It is the last day and sh[illegible]km [illegible]ft to run. Which equation will tell us how many km she has run b[illegible]ast d[illegible]



[illegible]2 -	8 - r = 42
42 [illegible]	r - 8 = 42

3) Tom collected 142 shells on the b[illegible] gav[illegible] to his sister. Now he has 94 shells left. Which equation tells u[illegible]w many [illegible] gave to his sister?



142 - 94 = s	142 [illegible]
s – 94 = 142	s [illegible] 94

4) Courtney saved 125 dollars to buy new shoes. She now has [illegible]n equation tells us how much the shoes cost?



s - 45 = 125	125 - 45 = s
45 + s = 125	125 – s = 45

5) The movie is 118 minutes long. They have watched 31 minutes. Which equation tells us how many minutes are left?



m - 31 = 118	118 - 31 = m
31 + m = 118	31 - m = 118

PREVIEW

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Curriculum Connection
C2.3

Word Problems – Solving Subtraction Equations

Instructions Solve the word problems using equations and variables

1) Bridgette started the weekend with $214 in her bank account. She went shopping (s) at the mall and now had $76. How much did she spend at the mall?



2) Sa found 1 r eggs during her Easter egg hunt. She gave some to her friends and now e s left. How many did she give (g) away?



3) There are 128 minutes in a movie n is ng. He watches 41 minutes and then pauses the movie for popc ow ma (m) are left?



4) Jeremy is climbing Mount Everest to Base Camp. It is 5,464m for a break with 1,100m left. How many metres has he climbed (c) alread



5) Pam is driving to her cottage in northern Alberta. The total distance is 721km. She has driven 315km already. How much more distance (d) does she need to drive?



PREVIEW

Name: _____ 110

Curriculum Connection
C2.3

Solving Subtraction Equations - Vacation

Questions Solve the problems below. The first one is done for you

1) Ron is driving 1,350km (x) to a resort with his family. They drive 415km on the first (f) day and 480km on the second (s) day. How many km do they have left (l)?



Equation : l = x – f – s or x – f – s = l

l = 1350 – [illegible] 480

l = 455km [illegible] Therefore, Ron and his family have 455km remaining to drive.

2) The [illegible] ide to b[illegible] $300 on dinner out for 3 nights. They spent $75 on the first (f) dinner, and $128 [illegible] nd [illegible] dinner. How much do they have left for the third dinner (t)?



Equation : _____

_____

_____ [illegible]ore _____

3) The family heads to the waterslide p[illegible]ey brin[illegible]tal (t). The two adults (a) cost $25 each. The two kids (k) cost $15 each. How [illegible]n do [illegible]ve left (L)?



Equation : _____

_____

_____ Therefore, _____

4) The family buys a 24 pack of mini donuts (d). Ron (r) has 4 and his [illegible]t [illegible]as 3. The kids (k) eat 10 together. How many donuts are left (l)?



Equation : _____

_____

_____ Therefore, _____

5) On the drive home, they take a short cut. The drive is 950km (d). They drive 380km the first day (f) and 430km the second (s) day. How many km do they have left (l)?



Equation : _____

_____

_____ Therefore, _____

PREVIEW

Name: _____ 111

Curriculum Connection
C2.3

Math Activity Title: Algebraic Bottle Flip Challenge

Objective

What are we learning about?

To practice and reinforce understanding of basic one-step and two-step subtraction algebra problems through the engaging and physically active bottle flip game.





Materials

What you will need for the activity.

- [illegible] bottles [illegible] pair/group) filled to approximately one-third with water (or [illegible] cups)
- Set of sub[illegible]o[illegible]gebra[illegible]ion cards
- Answer shee[illegible]ch gr[illegible]

PREVIEW

Instructions

How you[illegible]ple[illegible]vity

1. Start with a short lesson on one-[illegible]btract[illegible]gebra problems, using examples like x - 3 = 4.
2. Arrange the students into pairs or small [illegible] and [illegible] bottle and a set of question cards to each.
3. Each pair or group receives an answer sheet to [illegible]eir an[illegible]
4. Explain the rules: One student draws a question ca[illegible]ies [illegible] subtraction algebra problem.
5. Once they believe they have the correct answer, they write it [illegible] answer sheet.
6. The student then gets to attempt a bottle flip. After answering each [illegible]estion, the students gets only one flip. After they flip their bottle, they should keep track of successful flips and unsuccessful flips.
7. Alternate turns within each group or pair until they have completed all the question cards.
8. Groups or pairs tally their successful flips and compare with the rest of the class to determine the winning team (team with the most successful flips/correct answers). For incorrect answers, deduct a point from their successful bottle flips.
9. Go through the answer sheet with the class to ensure understanding and correct any misconceptions.
10. Discuss the strategies used to solve the subtraction problems and how this type of algebra is used in real-life situations.

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Curriculum Connection
C2.3

Questions Cut out the questions below and use for the game

x – 15 = 85	b – 20 = 50	200 – d – 10 = 162	190 – 30 – 54 = w
22 – g = 75	b – 33 = 67	180 – 25 – k = 110	e – 144 – 30 =82
150 – 10 = p	50 – c = 100	170 – j – 30 = 98	193 – t – 40 = 122
Dylan ha[illegible] candies[illegible] gave[illegible] awa[illegible] he has 55. How many did he give away?	Eva had 90 [illegible]yons and [illegible]ome. [illegible] has [illegible]ma[illegible] [illegible]e bre[illegible]	Sarah had 200 stickers, she gave 50 to one friend and 30 to another. How many stickers does she have left?	Sara set aside $400 for school supplies. She spent $90 on notebooks, $125 on textbooks, and some amount on art supplies. She has $125 left for pens and pencils. How much did she spend on art supplies?
Max had 150 marbles and lost some. Now he has 120. How many did he lose?	Ben had 200 pencils and gave some to his friends. Now he has 140. How many did he give away?	Jane ha[illegible]ooks she sold [illegible] and donated 80. H[illegible] many books does s[illegible] have left?	[illegible]mma saved $500 for a [illegible]he spent $200 on a [illegible]t, $150 on acco[illegible]ation, and [illegible]ome [illegible]unt [illegible] food. She [illegible]w mu[illegible] on
Lily had 120 stickers and used some. Now she has 90. How many did she use?	Charlie had 180 toys and gave some to charity. Now he has 130. How many did he give away?	Mike had 250 coins, he spent 70 and lost 50. How many coins does he have left?	Jack set aside $600 for a new computer. He spent $300 on the computer, $150 on accessories, and some amount on software. He has $50 left. How much did he spend on software?

PREVIEW

Name: _____ 113

Curriculum Connection
C2.3

Algebraic Bottle Flip Challenge

Answers | Record your answers below

1	
2	
4	
5	
6	
7	
8	
9	
10	
11	
12	

13	
14	
15	
16	
19	
20	
21	
22	
23	
24	

PREVIEW

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Curriculum Connection
C2.3

Pre-Algebra – Balancing Multiplication Equations

Balancing equations means both sides of the equal sign must be the same.

Examples:

$8 \overset{24}{\wedge} 3 = 24$ $\qquad$ $7 \overset{42}{\wedge} 6 = 42$

Instructi

Fill in the missing number to balance the equation

1) 6 x [ ]	2) 5 x 7 = [ ]	3) 4 x 5 = [ ]
4) 8 x [ ] = 16	5) [illegible] x [ ] = 18	6) 4 x [ ] = 28
7) [ ] x 5 = 25	8) [ ] x 6 = [illegible]	[illegible] [ ] x 3 = 18
10) 9 x 4 = [ ]	11) 7 x [ ] = 56	[illegible]
13) 3 x [ ] = 33	14) 10 x 9 = [ ]	15) 6 x [ ] = 54
16) 8 x [ ] = 48	17) 20 x 3 = [ ]	18) 4 x [ ] = 44
19) 12 x [ ] = 48	20) 14 x 4 = [ ]	21) 11 x [ ] = 110

PREVIEW

Name: _____ 116

Curriculum Connection
C2.3

Multiplication – Find the Variable

When we multiply a number by a variable, we do not need to use the multiplication sign. It is known that any variable next to a number means the operation we are using is multiplication.

Example: 7n = 14 means 7 x n = 14

We can figure out the unknown number by balancing the equation - n = 2.



Part 1 — Find out the value of the variable

1) 3 n =	2) n x 8 = 16 n =	3) s x 6 = 48 s =
4) 10 x 4 = p p =	6) n =	6) 6k = 18 k =
7) 3n = 18 n =	8) n x n =	9) n x 6 = 66 n =
10) 5n = 25 n =	11) 6 x 4 = t t =	12) 8 x 4 = p p =
13) 3n = 24 n =	14) 10n = 100 n =	15) 7d d =
16) 9s = 27 s =	17) 5 x 8 = s s =	18) 1 t =

PREVIEW

Part 2 — Calculate the area using the variables for length and width

The formula for calculating area is: A = L x W

Calculate the area in the questions below using the values for the variables L and W

L = 5 W = 8	A =
L = 9 W = 7	A =
L = 6 W = 11	A =

L = 4 W = 12	A =
L = 8 W = 5	A =
L = 3 W = 13	A =

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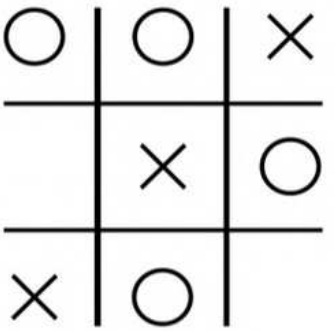
Curriculum Connection
C2.3

Math Tic-Tac-Toe: Solving Variables

Objective What are we learning about?

To help students practice solving subtraction equations involving variables in a fun and interactive way through a Tic-Tac-Toe game.



Materials What you will need for the activity.

- Whiteboard or chalkboard
- Markers or chalk
- Math Tic-Tac-Toe grid template (can be drawn on the whiteboard or printed on paper)

Instructions How you will complete the activity.

1. Draw a large tic-tac-toe grid on the whiteboard. In each cell of the grid, write a subtraction equation involving variables (e.g., $x - 5 = 7$). Divide the class into two teams: Team X and Team O.
2. Explain to the students that they will play tic-tac-toe by placing their mark (X or O) in a cell, they must first correctly solve the equation in
3. Team X will go first. A student from Team X will choose a cell, come to the board, and solve the equation written in that cell. If they solve it correctly, they place an X in that cell.
4. If the student answers incorrectly, they do not place their mark, and it becomes Team O's turn. A student from Team O will then choose a cell, solve the equation, and place an O if correct.
5. Continue alternating turns between the two teams. The first team to get three marks in a row (horizontally, vertically, or diagonally) wins the game.
6. After the game, discuss the different strategies used to solve the equations and any challenges faced during the activity.

PREVIEW

Name: _____ 119

Curriculum Connection
C2.3

Tic-Tac-Toe Use the following tic-tac-toe grids for the game.

5p = 40	6 × 9 = g	7n = 21
8s = 64	3 × 12 = f	4m = 28
9[illegible]	[illegible] × [illegible]	10a = 20

7p = 35	5 × 8 = w	6m = 36
9s = 63	4 × 11 = c	8n = 56
2t = 14	3 × 14 = z	10b = 80

4p = 28	6 × 12 = [illegible]	[illegible] = 25
8s = 72	3 × 10 = m	7k = 42
9q = 54	2 × 16 = v	10r = 90

3p = 21	7 × 11 = q	6m = 18
[illegible]	[illegible] × 9 = j	8n = 64
2k = 2[illegible]	[illegible] × 8[illegible]	[illegible] = 100

2p = 14	5 × 10 = d	7n = 49
9s = 81	3 × 13 = e	4m = 32
8r = 40	6 × 7 = y	10b = 70

6p = 30	4 × 12 = t	9s = 27
5k = 25	3 × 14 = r	7m = 21
8q = 64	2 × 15 = b	10a = 50

PREVIEW

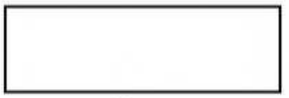
Name: _____ 120

Curriculum Connection
C2.3

Equation Pairs – Area of a Rectangle - Multiplication

Liam believes you can find the area of a rectangle in two different ways. Can you write the two equations you could use to solve the area of a rectangle?

Remember – a = l x w



Option 1	Option 2
a = 7 x 3	a = 3 x 7
a = 21cm²	a = 21cm²

Questio

Write two equations that represent the area of a rectangle

PREVIEW

#	Len	Width	Equation 1	Equation 2
1	7m			
2	5cm			
3	9km	6km		
4	10cm	8cm		
5	7m	4m		
6	9m	5m		
7	6cm	12cm		
8	8km	11km		
9	4cm	9cm		
10	7m	6m		

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Curriculum Connection
C2.3

Writing Multiplication Equations – Lottery Tickets

Amelia is selling lottery tickets for $15 a ticket. She needs to calculate how much money her customers owe her for her tickets.



Part 1 Use multiplication equations to fill in the table

#	# kets (t)	Equation 1 t x 15 = ?	Equation 2 15 x t = ?
1			
2			
3	8		
4	3		
5	7		
6	9		
7	10		
8	5		

PREVIEW

Part 2 Amelia sells tickets to two different people in the same saction

#	# of Tickets Person 1	# of Tickets Person 2	Equation
1	5	3	(5 x 15) + (3 x 15) = 120
2	4	7	
3	9	2	
4	2	5	
5	6	6	

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Curriculum Connection
C2.3

Multiplying Decimals – Solve the Variable

Practice Find the value of the variables below

1) 1.5n = 3 n =	2) n x 2.5 = 5 n =	3) s x 2.2 = 6.6 s =
4) [illegible] = p	5) 5.3p = 15.9 p =	6) 12.1r = 48.4 r =
7) [illegible].3n = n =	8) n x 3.5 = 17.5 n =	9) t x 4.4 = 22 t =
10) 6.7n = 20.1 n =	11) [illegible] = t	12) 3.4 x 2 = p p =
13) 7.6n = 38 n =	14) [illegible].5n = 4[illegible] n =	15) 10.1s = 50.5 s =
16) 7.5s = 45 s =	17) 4.2 x 3 = s s =	18) [illegible] x 4 = n

PREVIEW

Word Problem Solve the questions below

1) Rylan has grown 32.5cm since she was born. She grew 6.5cm each year. How many years has she been alive?



2) It rained 3.3mm every hour. In total, it rained 26.4mm. How many hours did it rain?

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C2.3

Activity: Multiplication Race

Objective What are we learning about?

Students will practice multiplication algebra questions by racing to solve equations quickly and accurately.

Materials What you will need for the activity.

- I
- Ma s or pe
- Timer (opt



Instructions How o activity

1. Prepare a stack of index c s wit and one-step algebraic equation questions. Include a mix blems re variety.
2. Have students line up in a single file.
3. Call the first two students in line to the fron ace to answer the multiplication algebraic equation question t acher rom the stack.
4. Pull a card from the stack and read the question aloud.
5. The first student to answer correctly wins the round. If a student s he wrong answer, they are out and go to the end of the line.
6. The student who answers correctly stays at the front to compete against the next student in line.
7. The student who loses goes to the end of the line.
8. Optional: If a student wins five rounds in a row, they move to the back of the line to give others a chance to play.
9. Continue the game until all students have had a chance to compete multiple times or until the designated game time is up.

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Curriculum Connection
C2.3

Multiplication Equations | Use these for the race

5x = 25	4y = 16	3z = 9
2.5a = 10	7b = 49	0.5c = 1
[illegible]	6y = 36	1.5z = 3
8x = [illegible]	[illegible]y = 11	2c = 20
10x = 50	[illegible]	6z = 18
4x = 12	2.2y = [illegible]	[illegible]c = 3
1.5x = 7.5	9y = 27	
5x = 45	7.5y = 15	3.5c = 7
2x = 10	6.5y = 13	8z = 32
0.6x = 3	5.2y = 10.4	2.5z = 5

PREVIEW

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C2.3

Pre-Algebra – Balancing Division Equations

Balancing equations means both sides of the equal sign must be the same.

Examples

$25 \div 5 = \boxed{5}$ (5)

$18 \div \boxed{3} = 6$ (6)

Instructi… Fill in the missing number to balance the equation

PREVIEW

1) 36 ÷ … =	2) 35 ÷ 7 = ☐	3) 20 ÷ 5 = ☐
4) 24 ÷ ☐ = 8	5) 8 ÷ ☐ = 3	6) 35 ÷ ☐ = 7
7) ☐ ÷ 5 = 4	8) ☐ ÷ 6 = …	☐ ÷ 3 = 9
10) 36 ÷ 4 = ☐	11) 56 ÷ ☐ = 8	…
13) 24 ÷ ☐ = 3	14) 99 ÷ 9 = ☐	15) 64 ÷ ☐ = 8
16) 48 ÷ ☐ = 6	17) 20 ÷ 4 = ☐	18) 48 ÷ ☐ = 12
19) 49 ÷ ☐ = 7	20) 36 ÷ 3 = ☐	21) 72 ÷ 6 = ☐

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C2.3

Writing Division Equations - Sharing

Riley is the best boss! Every week, she brings in treats for her staff to share. Each week, there are different treats and a different number of staff members working at the office.



Questions Use a formula to find out how many treats (t) each person gets

#		# of Staff (s)	Formula	Answer
1	16 donut	8	d ÷ s = t	16 ÷ 8 = 2
2	12 co		c ÷ s = t	
3	20 muffins (m)	5		
4	16 slices of pizza (p)	4		
5	10 bagels (b)	10		
6	15 donuts (d)	5		
7	24 cookies (c)	8		
8	18 muffins (m)	6		
9	28 pastries (p)	4		
10	32 cookies (c)	8		
11	36 slices of pizza (p)	9		
12	24 bagels (b)	3		
13	25 muffins (m)	5		

PREVIEW

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Curriculum Connection
C2.3

Solving Division Equations

Questions Solve the problems below. The first one is done for you

1) Jonathon has 1000 potatoes (p) from his farm. He wants to sell them in bags (b) of 20. How many bags will he have in total (t)?



Equation : t = p ÷ b

t = 1000 ÷

t = 50 re, Jonathon will have 50 bags of potatoes to sell.

2) M cts (s) for 160 minutes total (t). If he teaches the 4 subjects equally, w man n) will he teach each subject?

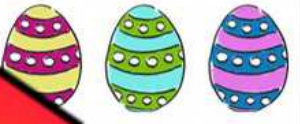


Equation : _____

_____

_____ ,

3) A family with 2 brothers and 2 sters hunt. The 4 kids (k) find 240 easter eggs in total (t). How many eggs each if they are split equally?



Equation : _____

_____

_____ Therefore, _____

4) A family of 5 (f) buys a pack of donuts. Each family member gets many donuts were there in total (t)?



Equation : _____

_____

_____ Therefore, _____

5) A group of friends (f) go on a trip together. They all agree they will equally split up the driving duties. The total (t) distance is 1750km. Each friend drove (d) 250km. How many friends went on the trip?



Equation : _____

_____

_____ Therefore, _____

PREVIEW

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Curriculum Connection
C2.3

Matching Game: Do The Equations Match

Objective What are we learning about?

To enhance students' understanding of equality within addition and subtraction equations. Students will identify and match pairs of equations that yield the same result, fostering critical thinking and problem-solving skills in a collaborative group set

Mat W will need for the activity.

- Pre-prepar re-c g cards.
- Small bags or envel old t ts for each group



Instructions How you will complete the

1. Before the class, the teacher will cut out the p red m ng game cards.
2. Divide the students into small groups and give each group ag elope containing a set of the matching cards.
3. In their groups, students will spread out the cards face down on their table.
4. Each person takes a turn to try to match two cards. They will need to solve both equations to see if they match (equal the same).
5. If they find a correct match, they keep the cards out and continue with their next turn. If the cards don't match, they turn them back over in the same place, and the next player takes a turn.
6. The activity continues until all pairs are correctly matched within each group.

PREVIEW

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Curriculum Connection
C2.3

Cards | Matching Game Cards

35 + 20	25 + 30
45 - 25	30 x 4 + 80
80 ÷ 2	100 - 60
12.5 + 22.5	25 + 10
60 - 25	30 + 5

PREVIEW

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C2.3

Cards | Matching Game Cards

50 ÷ 2 + 30	10 + 45
35 [illegible] 15	60 + 25
24.5 + 10.5	[illegible] x 1
40 ÷ 2 - 15	20 - 20 [illegible] 5
45 x 2 - 30	60 + 0

PREVIEW

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C2.3

Algebra Jeopardy

Objective What are we learning about?

To reinforce students' understanding of basic algebraic concepts and their application to solve simple equations and word problems in a fun and competitive game for

Mat will need for the activity.

- Jeopardy b the ne
- Buzzer or bell



Instructions How you will comp acti

1. Print the Jeopardy board on the next p
2. Divide the class into two teams.
3. Ask one team to go first by selecting a point value.
4. Read the question aloud from the point value.
5. The first team to ring the bell or buzzer gets to answer.
6. If they answer correctly, award them the points. If not, another team can answer.
7. Continue the game until all questions have been answered.
8. Tally the points to determine the winning team.
9. Conclude by discussing what they learned about the topic in the questions.

PREVIEW

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C2.3

Jeopardy Questions | Ask students the questions below

$100	$200	$300	$400	$500
7 + 5 = ?	4y = 24. Find y.	4x - 5 = 15. Find x.	If 5 apples cost $10, what is the cost of one apple?	Sarah is 4 years older than twice her sister's age. If Sarah is 28, how old is her sister?
12		24 = 3x + 18. Find x.	If 4 cookies cost $8, how much does each cookie cost?	Tom has 3 times as many books as Jerry. Together they have 44 books. How many books does each have?
5 x 8 = e What is e?	5x = 25. Find x.	3 = hat is	rah bought 3 for $15. h did each ost?	Sarah has 5 times as many marbles as Ben. Together they have 42 marbles. How many marbles does each have?
5x = 25. Find x.	2x + 3 = 13. Find x.	21n + 7 = 84. Solve for n?	hirt costs $1 the total c	iangle's perimeter is ne side is twice the and the third nd the s.
14 - 9 = ?	6 + 7 - 4 = ?	12r - 4 = 32. What is r?	If a box contains 24 candies and you give 5 to each friend, how many friends can you give candies to?	into two piece e piece is 5 times as long as the other. Together, they are 72 meters long. How long is each piece?
5 = x - 3. What is x?	8 × 3 - 4 = ?	12 ÷ 4 + 2 = ?	If a movie ticket costs $12 and you buy 3 tickets, what is the total cost?	In a garden, the number of roses is 2 times the number of tulips. If there are 45 flowers in total, how many roses and tulips are there?

PREVIEW

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C2.3

Mixed Operations - BEDMAS

When solving an equation, you need to follow the order of operations. This means you have to solve the equation in the correct order, not just from left to right. Using BEDMAS helps us remember the order to solve.

1. Brackets 2. Exponents 3. Division or Multiplication (whichever is first) 4. Addition or Subtraction (whichever is first)

Exam
2 + (
2
n =

Example 2
n - (2 x 3) = 4
n - 6 = 4
n = 10

Example 3
(4n) - 8 = 20
4 x 7 - 8 = 20
n = 7

PREVIEW

Questions

out e variables using BEDMAS

1) 3 + (4 x 5) = n	21	3) (8 x 4) + 4 = t
4) n + (12 ÷ 6) = 12	5) 12 + (2 + 10) =	2 = 8
7) 24 ÷ 6 + 14 = t	8) 17 – 2 x 5 = n	9) 25 – 5n = 20
10) 14 + n – 7 = 22	11) 6n + 5 = 35	12) 18 – 5 x 2 = t

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Curriculum Connection
C2.3

Writing Algebraic Expressions

Using algebraic expressions helps us understand mathematical situations. We can use a variable to replace a changing number, like how many tickets are sold to a game: 10t



Part 1 Write each algebraic expression in words.
Use the words, "a number" in place of the variable

1) $9 - t$

Nine sub[illegible]

2) n[illegible]

3) $6 + b$

4) $12r$

5) $\frac{y}{8} + 5$

Part 2 Write an algebraic expression for each statem[illegible]

1) Twelve times a number subtract eight

2) Divide a number by seven and multiply it by a different number

3) A number is subtracted by fourteen divided by five

4) Triple a number subtracted by double a different number

5) Divide eighty by a number, then multiply by four

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Curriculum Connection
C2.3

Algebraic Expression - Terms

An **expression** is simply numbers and at least one operation put together without an equal sign. For example, 8 + 2 is an expression.

An **algebraic expression** is when we use a variable in an expression. The **variable** represents an unknown value. We use algebraic expressions to help us solve mathematical situations.

For exam if you were selling lemonade for $2, you could use the following algebraic sion where the variable *c* represents cups sold: 2*c*

In an al sion, we have at least one term. A term could be a constant and/ le, also include a coefficient.



Terms	Defin
Variable	An unknown value tha s repre d b tter. We use a letter because the value could cha
Constant	A number on its own. It does no n t e clude any variables. Therefore, the number is
Coefficient	A number used to multiply a variable
Term	Is either a single number or a variable, or num a bles multiplied together

PREVIEW

Instructions Answer the questions below about the expression provided

Expression	5n - 3y – 8 + 4
List the variables	
List the constants	
List the coefficients	
How many terms are there?	

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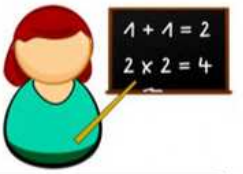
C2.3

Algebraic Expression - Terms



Part 1 Answer the questions below about the expression provided

Expression	$9 - 3n + 30t - (2y + 7x) - 5$
List the variables	
List the c nts	
List the	
How terms	

Expres	$\frac{32}{n} + 7m + 125 + 3b - 75 + 2 \times 5$
List the variables	
List the constants	
List the coefficients	
How many terms are there?	

PREVIEW

Part 2 Write your own expressions by following th istr

1) Write an expression that has 4 terms, 3 coefficients, 3 variables, constant
2) Write an expression that has 5 terms, 3 coefficients, 4 variables, and 1 constant
3) Write an expression that has 6 terms, 2 coefficients, 3 variables, and 3 constants

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Curriculum Connection
C2.2

Writing Algebraic Expressions - Treats

A mathematical expression is similar to an equation, but it does not have an equal sign. We use expressions to describe a mathematical situation.

Questions Write the expressions for the situations below

1) Lindsay has *y* amount of cookies. She gives 23 cookies away to the students in her class.



Expressi

2) Co ies into *b* pieces. She eats 3 brownies.



Expression:

3) Alyse makes c kes t ally with her 8 friends.



Expression:

4) Hani gives 3 freezies to eac his iends.



Expression:

5) Scott has 8 sodas in his fridge and buys *s* odas



Expression:

6) Dan buys a dozen donuts and eats *d* number of don re



Expression:

7) Steve buys *x* number of cookies and gives 18 to his staff.



Expression:

8) Alexa has 28 suckers that she shares equally with her *f* number of friends.



Expression:

9) Brian has 100 gummy worms and takes *n* number of gummies from his brother.



Expression:

10) Trisha gets *n* number of treats for every 10 goals she scores in hockey.



Expression:

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Curriculum Connection
C2.3

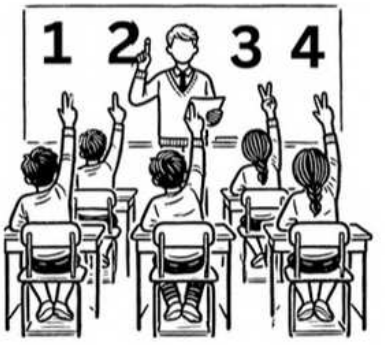
Finger Signals Quiz - Understanding Algebraic Expressions

Objective What are we learning about?

Students will reinforce their understanding of algebraic expressions through an interactive finger signals quiz.

Materi ...u will need for the activity.

- A list of q... o...



Instructions How y... ...mple... ...ctivity

1. Prepare a list of questions with ...nswer... ...s labeled A, B, C, and D.
2. Explain the finger signals for each ansv... ...ice: ... for A, two fingers for B, three fingers for C, and four fingers ... D.
3. Inform the students they will show their answer u... ...e fi... ...n... ...when you read each question.
4. Read the first question aloud clearly and repeat if necessary.
5. Give students a few moments to think about their answer and decide independently.
6. After a countdown (e.g., "3, 2, 1"), have all students show their answer simultaneously by raising the appropriate number of fingers.
7. Reveal the correct answer and explain why it is correct.
8. Repeat with different questions to reinforce understanding of algebraic expressions.

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Curriculum Connection
C2.3

Question	A	B	C	D
A musician practices m hours each day for 7 days. What is the total practice time?	7+m	7−m	7m	m ÷ 7
A cyclist rides d kilometers per day for 5 days. What is the total distance?	5+d	5−d	5d	d ÷ 5
A library has b books and gives away 3. How many books are left?	b+3	b−3	3b	b ÷ 3
Mia collects s stamps every month. How many s does she collect in 3 months?	3+s	3−s	3s	s ÷ 3
Ben runs r km every day for a week (7 days). What is the total distance?	7+r	7−r	7r	r ÷ 7
A factory produces p toys every hour for 8 hours. How many toys are produced in total?	8+p	8−p	8p	p ÷ 8
Lily has t toys and gives 4 to her friends. How many toys does she have left?		t−4	4t	t ÷ 4
David collects c coins every day. How many coins does he collect in 10 days?	10+c	10−c	10c	c ÷ 10
Olivia reads p pages every day. How many pages does she read in a week (7 days)?			7p	p ÷ 7
James has b balloons and gives 3 away. How many balloons are left?	b+3			b ÷ 3
Emma writes p pages of her book each day for 5 days and then tears out 3 pages. How many pages are left?	5p−3	5p+3		5 x p ÷ 3
Alex has q quarters. He buys a toy that costs $2 (8 quarters). How many quarters does he have left?	q ÷ 8	q+8	q x 8	q−8
A pizza is cut into s slices. Tom eats 3 slices. How many slices are left?	s+3	s−3	3s	s ÷ 3
Kate has m marbles. She buys 7 more and then loses 2. How many marbles does she have now?	m x 7	m+2−7	m+7−2	m ÷ 2
John has t toys. He gives 5 to his friend and then buys 3 more. How many toys does he have now?	t−5+3	t+5−3	5t + 3	t ÷5 + 3

PREVIEW

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Curriculum Connection
C2.3

Evaluating Algebraic Expressions

When solving an equation, you need to follow the order of operations. This means you have to solve the equation in the correct order, not just from left to right. Using BEDMAS helps us remember the order to solve.

1. Brackets 2. Exponents 3. Division or Multiplication (whichever is first) 4. Addition or Subtraction (whichever is first)

Example 2
2 + (
2
2 +
14

Example 2 $y = 5$
$y - (1 + 2)$
$5 - (1 + 2)$
$5 - 3$

Example 3 $y = 3$
$10 - 3 \times y$
$10 - 3 \times 3$
$10 - 9$
1

PREVIEW

Part 1 Evaluate t ing e ns for x = 4

1) $x + 5 - 3$	2) 10	3) $42 - 3x$
4) $\frac{12}{x} + 5^2$	5) $15x - (20 + 5)$	$\frac{00}{x}$

Part 2 Evaluate the following expressions for y = 6

1) $y + 8 - 2^2$	2) $2^4 + (y - 4)$	3) $100 - (y^2 + 3)$

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C2.2

Evaluating Algebraic Expressions

Part 1 — Evaluate the following expressions for x = 4

1) $x + 16$	2) $10x$	3) $63 - x$	4) $x \div 2$
5) $16 \div$	6) $12x$	7) $4x - x$	8) $12 \div x + 8$

Part 2 — Eval[illegible] the f[illegible]ressions for y = 7 and n = 5

1) $y - n + 22$	2) $5n$	[illegible] $y + n$	4) $y \div 7 + n$
5) $35 \div y + n$	6) $11n - y$	7) [illegible]	[illegible] $\div n + y$

Part 3 — Evaluate the following expressions for x = 9 and p = 3

1) $x + p - 10$	2) $10x + (2p)$	3) $54 \div x - p$	4) $x + 9 + (3p)$
5) $18 \div x + (5p)$	6) $9x - (18 - p)$	7) $6x - 5p$	8) $8p + 3x$

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C2.2

Writing Expressions

There are an endless number of expressions that represent the same number.
For example, both of the expressions below equal 10

when $y = 5$			
Equation 1	$y + 5$	**Equation 2**	$4y - 10$

PREVIEW

Part 1 Write four different expressions that represent the number 8. Use y = 3.

1)	2)
3)	

Part 2 Write four different expressions using more than one operation that represents the number 6. Use y = 10

1)	2)
3)	4)

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Curriculum Connection
C2.1

Adding Monomials

Questions | Add the monomials below

1) 4n + 6n = _____n	2) 8p + 2p = _____p	3) 13t + 12t = _____t
4) 17b + 1 = _____	5) 24n + 32n = _____n	6) 29p + 39p = _____p
7) 7y + 9y + 18y = _____y	14 [illegible] 18n = _____n	9) 17x + 26x + 34x = _____x
10) n + 35n + 41n = _____n	11) 12y + 19y + 16y = _____y	12) 4 [illegible] 16p + 21p
13) 15y + 11y + 28y = _____y	14) 24n + 31n + 12n + 8n = _____n	15) 6y + 12y + 17y + 11y = _____y
16) 13y + 26y + 15y + 11y = _____y	17) 31t + 37t + 11t + 7t = _____t	18) a + 97a + 13a + 21a = _____a

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Curriculum Connection
C2.1

Adding Monomials

Multiple Choice Circle the correct answer

1) 10s + 6s	6) 22p + 7p
a) 16s	a) 29
b) 15s	b) 28
c) 16	c) 29p
d) 16s²	d) 29p²
2) [illegible]	7) 65n + 37n
a) 59x	a) 97n
b) 59b²	b) 102n
c) 59b	c) 102n²
d) 59	d) [illegible]
3) 12y + 9y + 8y	8) [illegible] + 15n
a) 28y	a) [illegible]
b) 28y²	b) [illegible]
c) 29y	c) 67n²
d) 29y²	d) 67n
4) n + 63n + 46n	9) 18y + 19y + 14y +
a) 110	a) 59y
b) 111n	b) 58y
c) 110n	c) 59y²
d) 111	d) 58y²
5) 22y + 13y + 28y + y + y	10) 27n + 22n + 11n + 8n
a) 64y	a) 68n
b) 65y²	b) 68n²
c) 65y	c) 67n²
d) 66y	d) 67

PREVIEW

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Curriculum Connection
C2.4

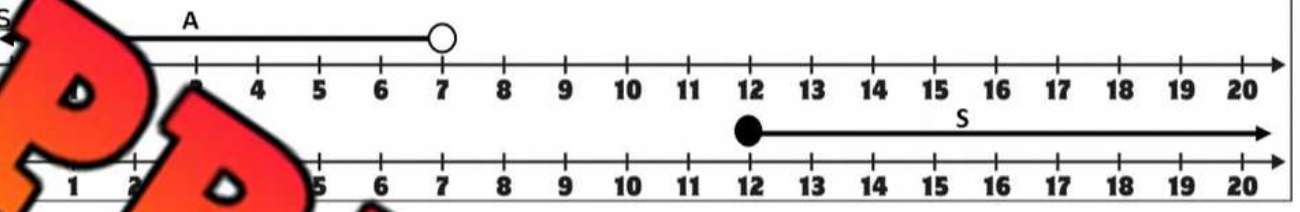
Introduction to Inequalities

Inequalities are used to tell the relative size of two expressions or numbers. We can use the greater than sign (>), or the smaller than sign (<). We can also use a new sign (≥) to show that a value is equal to or greater/less than the other value.

We often use a number line to graph the range of values that hold true for an inequality. An open dot on a number line is used when an inequality involves "less than" or "greater than", and a closed dot is used when it also includes "equal to".

Examples

A < 7



S ≥ [illegible]

PREVIEW

Questions

[illegible] the in[illegible]on the number line and write the word form

1) X ≥ 7



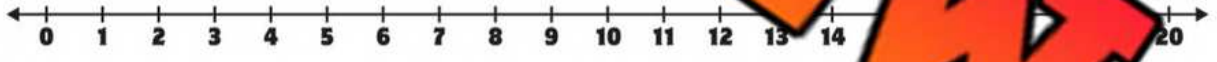
Word Form - x is greater than or equ[illegible]

2) X ≤ 15



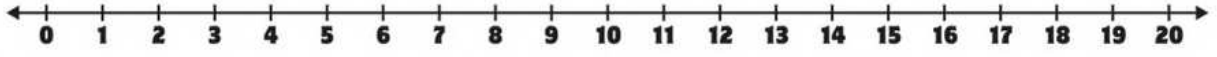
Word Form - _____

3) X < 7



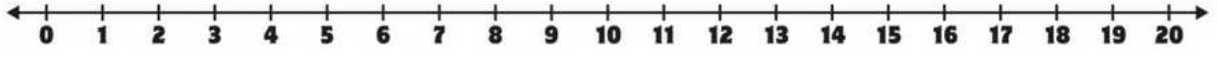
Word Form - _____

4) X > 19



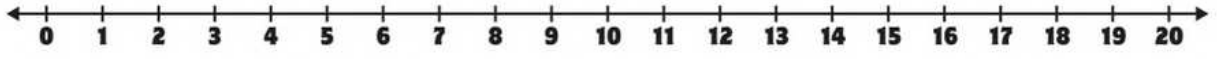
Word Form - _____

5) X ≥ 12



Word Form - _____

6) X ≤ 17



Word Form - _____

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Curriculum Connection
C2.4

Inequalities – Multiple Choice

Questions | Circle the values that satisfy each inequality

1) $x > 26$

45 18 10 33

2) $x < 49$

17 62 55 33

3) x

47 [illegible] 55

4) $x > 55$

62 53 71 55

5) $x < 68$

52 66 75 73

6) $x \leq 88$

72 91

7) $x > 83$

83 92 82 95

8) $x <$

88 85 [illegible] 83

9) $x \leq 96$

95 85 96 103

10) $x > 92$

92 90 95 93

11) $x < 99$

95 88 102 99

12) $x < 95$

95 90 100 98

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Name: _____ 163

Curriculum Connection
C2.4

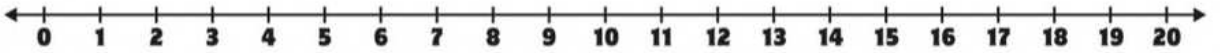
Solving Inequalities - Addition

A A <

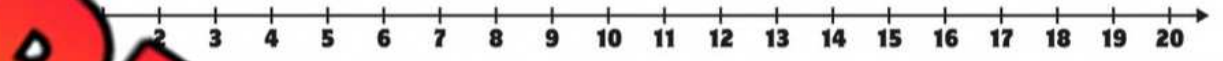
S S ≥

Questions Graph the addition inequalities using the number line

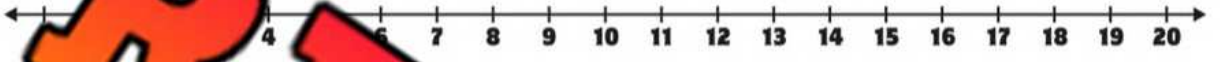
1) 3 + a > 10



2) 8 + b ≤



3) c



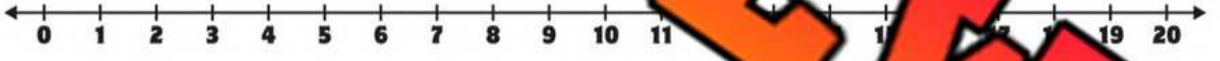
4) d + 10 ≤ 11



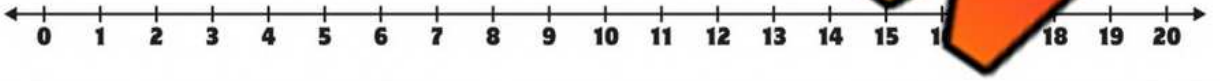
5) 13 + e ≥ 15



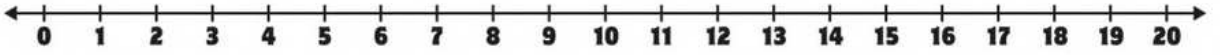
6) 5 + f > 18



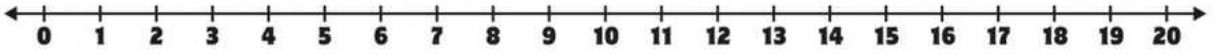
7) g + 1 > 7



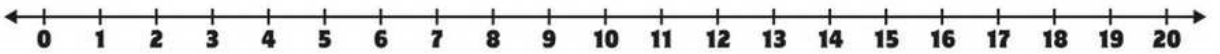
8) 10 + h ≥ 18



9) 12 + m > 20



10) n + 11 ≤ 16



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Curriculum Connection
C2.4

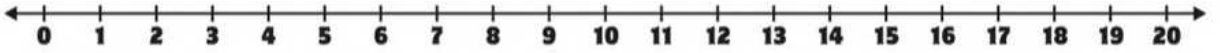
Solving Inequalities - Subtraction

A A <

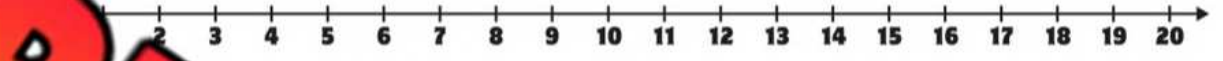
S S ≥

Questions Graph the subtraction inequalities using the number line

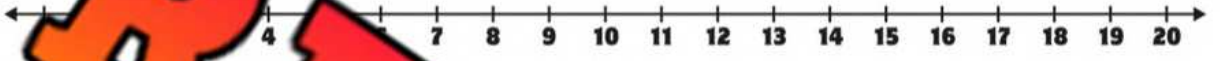
1) 13 - a > 7



2) 18 - b ≤ 9



3) c



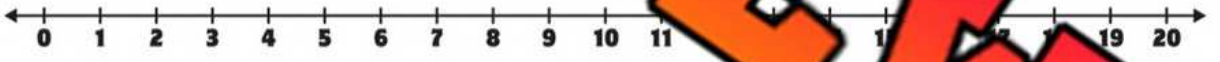
4) d - 10 ≤ 6



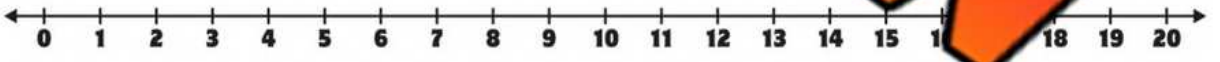
5) 13 - e ≥ 4



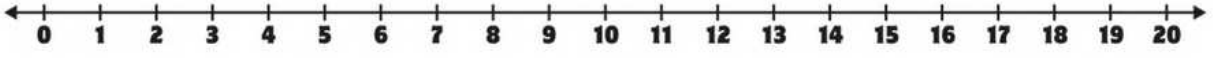
6) 5 - f > 1



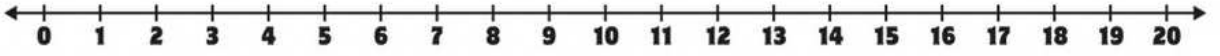
7) g - 1 > 7



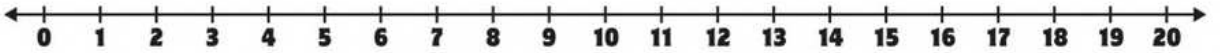
8) 10 - h ≥ 6



9) 12 - m > 8



10) n - 11 ≤ 9



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Name: _____ 167

Curriculum Connection
C2.4

Inequalities to 100

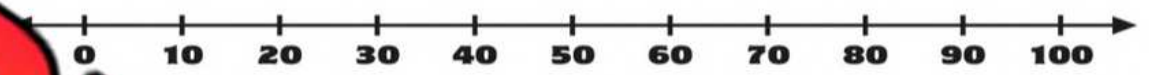
Part 1 — Graph the inequality on the number line and write the word form

1) X > 40



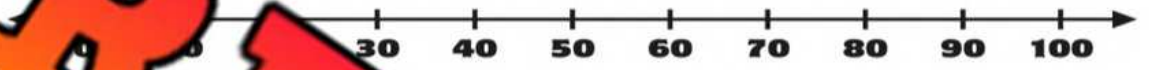
Word Form - _____

2) X ≤ 60



Word F_____

3) X <



Word Form - _____

4) X > 40



Word Form - _____

5) X ≥ 10

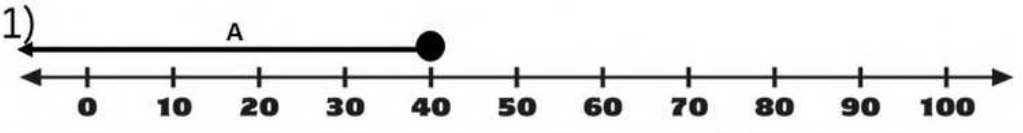


Word Form - _____

PREVIEW

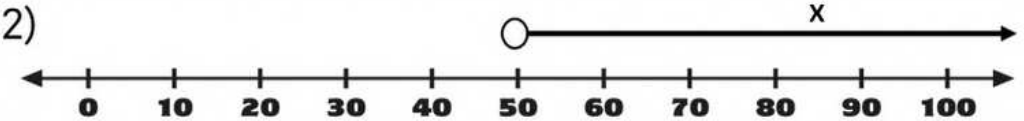
Part 2 — Write the inequality shown on each num_____ line

1)



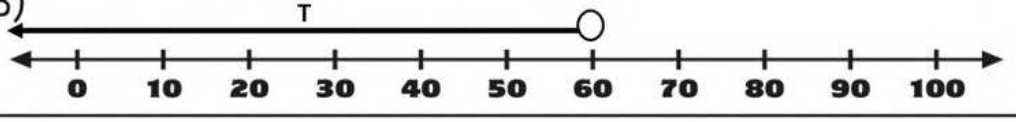
swer _____

2)



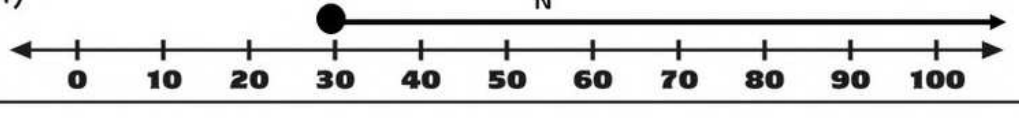
Answer _____

3)



Answer _____

4)



Answer _____

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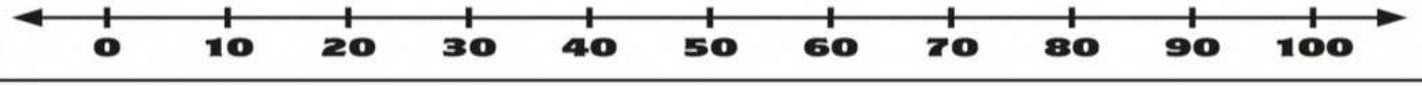
Name: _____ 168

Curriculum Connection
C2.4

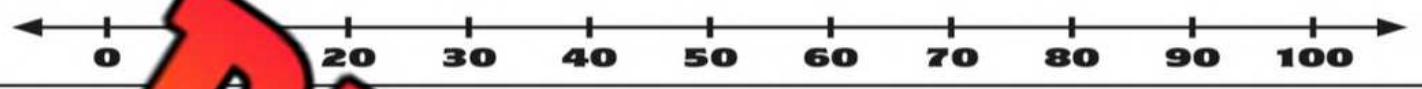
Addition and Subtraction Inequalities to 100

Part 1 — Graph the addition inequalities using the number line

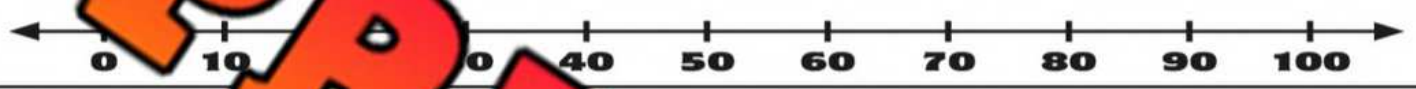
1) $40 + a > 70$



2) $60 + b \leq 80$



3) c +



4) $d + 20 \leq 50$

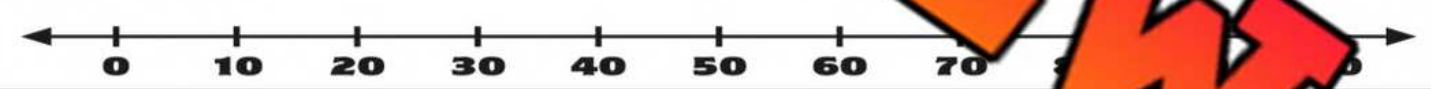


5) $40 + e \geq 80$

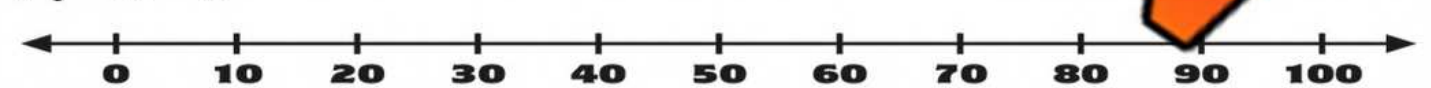


Part 2 — Graph the subtraction inequ using er line

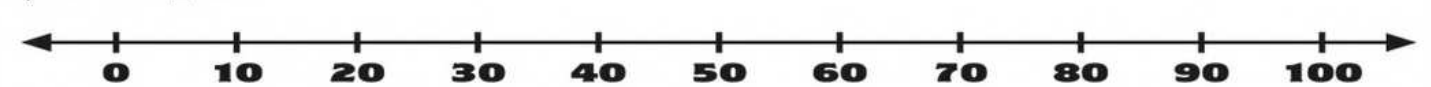
6) $50 - f > 30$



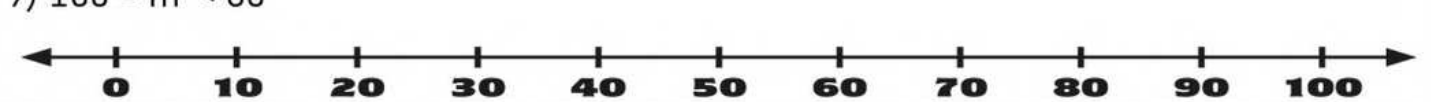
7) $g - 10 > 70$



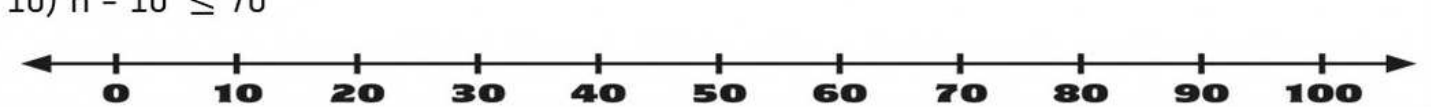
8) $50 - h \geq 30$



9) $100 - m < 80$



10) $n - 10 \leq 70$



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Curriculum Connection
C2.4

Inequalities – Adding and Subtracting

Questions | Solve the inequalities below

1) $x > 6 + 12 - 5$
$x > 13$

2) $x < 9 \times 3 - 8$

3) $y \leq 1$

4) $t \geq 5 - 4 + 20$

5) $x < 8 + 10 - (4 \times 2)$

$p \leq 27 - 7 + 15$

7) $x > 6 \times 5 \div 2$

8)

9) $x \leq 16 \div 4 \times 10$

10) $x > 65 - 6 + 13$

11) $x < 9 \times (4 + 6)$

12) $x < (24 \div 8) \times 6$

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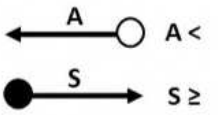
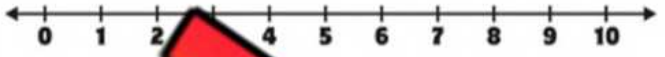
Curriculum Connection
C2.4

Graphing Inequalities – Multiple Operations

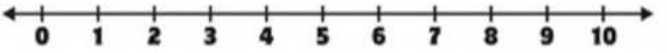
Questions Graph the inequalities on the number line



1) $x > 2 + 10 - 5$



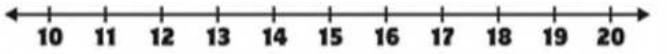
2) $x < 14 - 10 + 4$



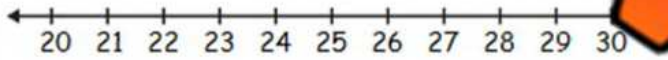
3) $y \leq 12$ [illegible] 3



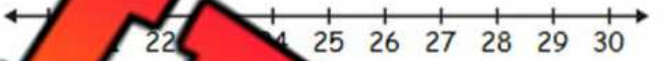
4) $t > 15 - 13 + 16$



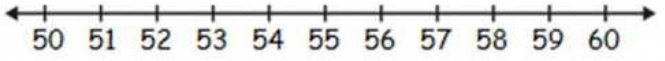
5) $t \geq 12 \times 3 - 9$



$p \leq 42 \div 6 + 15$



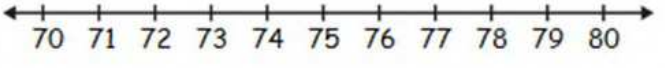
7) $x > 11 \times 6 - 13$



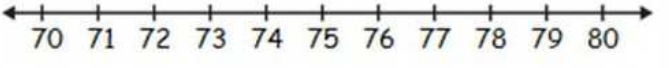
8) [illegible]



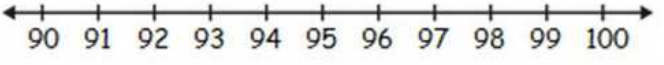
9) $x \leq 32 \div 4 \times 9$



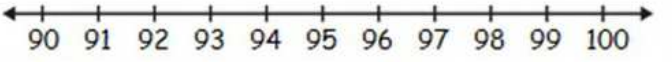
10) $x > 65 + 16 - 8$



11) $9 \times 3 \times 3 + 10 < x$



12) $60 \div 6 \times 9 + 8 > x$



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Curriculum Connection
C2.4

Inequalities – Isolating the Variable

Steps to isolating a variable

1. Add or subtract the same amount from both sides so that the variable is by itself
2. If the number that is with the variable is positive, you will subtract the same number from both sides.
3. If it is negative, you will add the number to both sides.
4. Since we want the variable on the left, we might need to flip it to the other side at the end. When we do this, we switch the inequality sign from < to > or from > to <.

Example:

$y - 14 \leq 9$
$14 + 14 \leq 9 + 14$
$y \leq 23$

$15 > x + 9$
$15 - 9 > x + 9 - 9$
$6 > x$
$x < 6$

PREVIEW

Questions Solve the inequalities below

1) $x - 5 < 9$

2) $y + 10 < 19$

3) $x + 13 \leq 18$

4) $x - 8$

5) $9 < p + 15$

6) $13 \leq 18 - s$

7) $x + 25 > 39$

8) $48 < h + 21$

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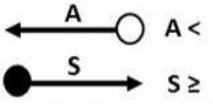
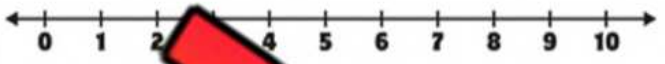
Curriculum Connection
C2.4

Inequalities – Isolating the Variable

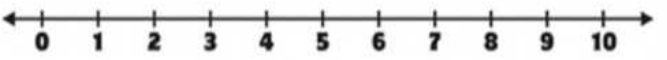
Questions Graph the inequalities on the number line



1) $6 + x > 10$



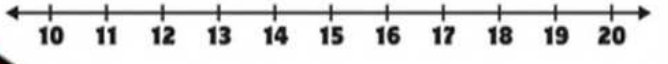
2) $x - 8 < 1$



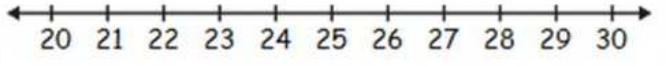
3)



4) $6 + t > 25 - 5$



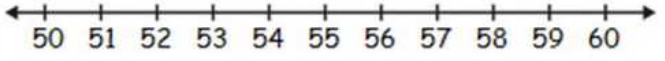
5) $8 + t \geq 10 \times 3$



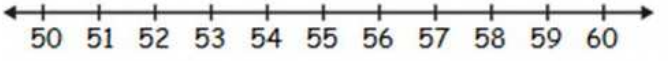
6) $\leq 50 \div 5$



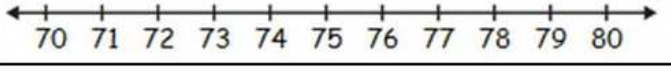
7) $x - 10 > 11 \times 4$



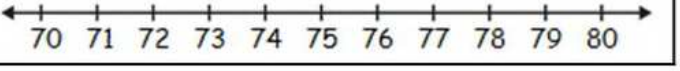
8) $x - 12 \leq 9 \div$ 15



9) $8 + x \leq 9 \times 9$



10) $11 + x > 65 + 20 - 3$



PREVIEW

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Name: _____ 173

Algebra Quiz - Equations

Part 1 — Find out the value of the variable

9 + n = 15 n =	124 + 15 = y y =	p + 48 = 79 p =
9[illegible]3 = y	76 - y = 61 y =	p - 16 = 50 p =
[illegible] n	n x 6 = 36 n =	s x 6 = 48 s =
45 ÷ n = n =	[illegible] 11 = 5	24 ÷ 4 = p p =

Part 2 — Find out the value of [illegible]

a + b + c = d a = 9 b = 10 c = 8 _____ + _____ + _____ = d d =	t[illegible] g = 6 _____[illegible] h =
r ÷ y = t r = 28 y = 7 _____ ÷ _____ = t t =	en = f e = 2 _____ x _____ = f f =
ab = c a = 6 b = 8 _____ x _____ = c c =	e + c + g = t e = 9 c = 6 g = 14 _____ + _____ + _____ = t t =
a - b = c a = 108 b = 11 _____ - _____ = c c =	e - n = f e = 125 n = 22 _____ - _____ = f f =

PREVIEW

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Part 3 Find the value of the variables below

6.5 - n = 3 n =	n - 2.5 = 4 n =	s - 3.2 = 2 s =
22.7 - n = 20.1 n =	9.1 - p = 7 p =	12.1 - r = 10.5 r =
n =	n + 16.5 = 18.5 n =	22.2 + n = 23.1 n =

PREVIEW

Part 4 Find the [illegible] variables using BEDMAS

6 + (4 x 5) = n	25 [illegible]	(8 x 4) + (4 ÷ 2) = t
n + (12 ÷ 6) = 12	18 - 5 + (6 x 8) = t	[illegible] = 25

Part 5 Solve the word problems below

1) Jacob picked 15 apples (a) from each row of apple trees. He picked 75 apples in total (t). How many apples did he pick in each row (r)?

Equation : _____

_____

_____ Therefore, _____

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2) They decide to budget (b) $400 on dinner out for 4 nights. They spent $90 on the first (f) dinner, $128 on the second (s) dinner and $85 on the third (t) dinner. How much do they have left for the fourth dinner (f)?

Equation: _____

_____

_____ Therefore, _____

3) A family of 6 (f) buys a pack of donuts. Each family member gets 4 donuts (d). How many donuts were there in total (t)?

Equation: _____

_____

_____ Therefore, _____

4) Hailey spe[illegible] (t) [illegible]orting goods store. She bought new skates (s) for $275, new g[illegible]) for [illegible] new stick for (*s*) number of dollars. How much is *s* worth?

Equation: _____

_____

_____ Therefo[illegible]

PREVIEW

Part 6 — Add the monomials together

1) 7n + 4n = _____n	2) 11p + 5p = _____p	[illegible] = _____t
4) 12b + 11b = _____b	5) 28n + 32n = _____n	6) 32p + 39p = _____p
7) 18y + y + 18y = _____y	8) 14n + 28n + 18n = _____n	9) 15x + 16x + 34x = _____x

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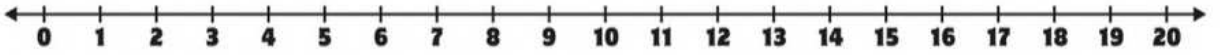
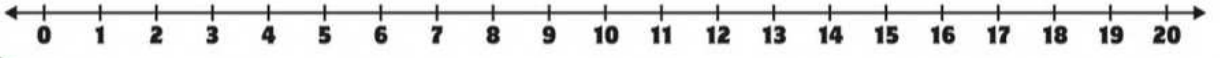
Part 7 Graph the inequalities on the number line

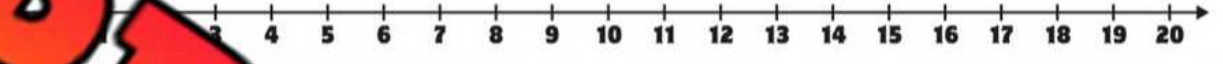
1) $3 + a > 10$



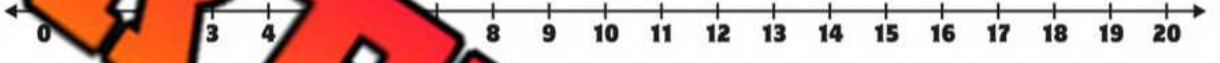
2) $8 + b \leq 15$



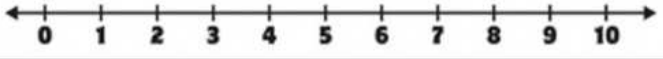
3) $c - 5 >$



4) $d - 1 \leq 6$



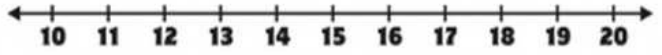
5) $x > 2 + 10 - 5$



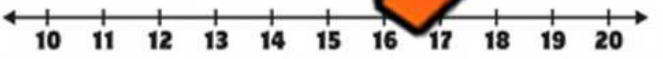
$x < 14 - 10 + 4$



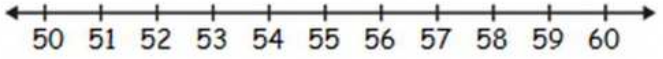
7) $y \leq 12 \div 3 + 13$



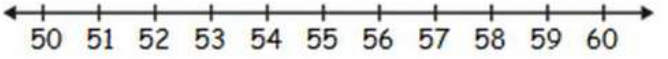
8) $t > 15$



9) $x - 10 > 11 \times 4$



10) $x - 12 \leq 9 \div 3 \times 15$



PREVIEW

Grade 6
C3. Coding

	Curriculum Expectations	Pages That Cover the Expectations
C3.1	solve problems and create computational representations of mathematical situations by writing and executing efficient code, including code that involves conditional statements and other control structures	178 – 179, 182 – 188, 190 – 198, 201 - 210
C3.2	read and alter existing code, including code that involves conditional statements and other control structures, and describe how changes to the code affect the outcomes and the efficiency of the code	180 – 181, 183, 185 – 186, 189, 195 – 197, 199 - 200

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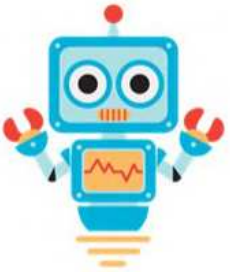
Curriculum Connection
C3.1

Writing Code



Writing Code – Code Bank

go right (# of spaces)
go left (# of spaces)
go down (# of spaces)
go up (# of spaces)
open door



Robot moved _____ squares



1. Write the code that gets the robot to the door

Line 1: _____

Line 2: _____

3: _____

PREVIEW

2. Write the code that gets t… to th… then home.

Line 1: _____

Line 2: _____

Line 3: _____

Line 4: _____

Line 5: _____

Line 6: _____



Robot moved _____ squares

3. Write the code that gets the robot to the gym and then home.

Line 1: _____

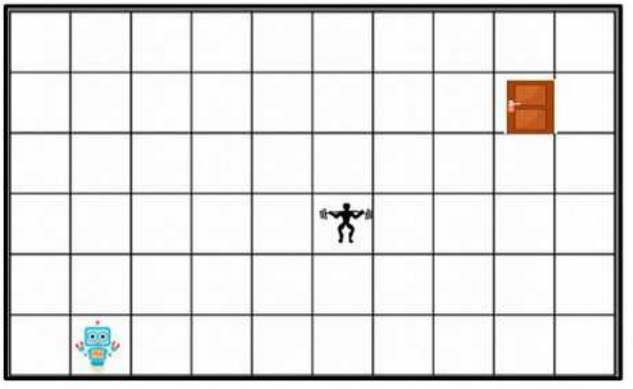
Line 2: _____

Line 3: _____

Line 4: _____

Line 5: _____

Line 6: _____



Robot moved _____ squares

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Name: _____ 180

Curriculum Connection
C3.2

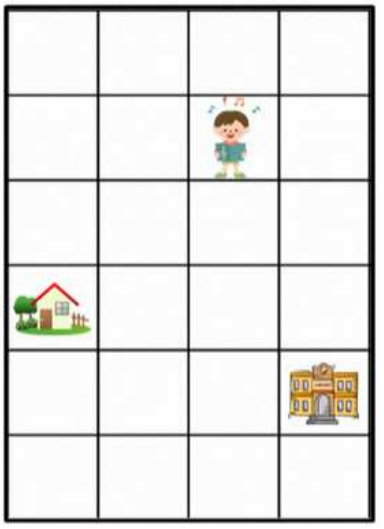
Fixing Code

Question Put the scrambled code in the correct order by labelling the steps 1-6

1. Go to school and then home

Code

_____ - go up 1
_____ - go down 3
_____ - go
_____
_____ - left 3
_____ - enter



2. Go to school and then

Code

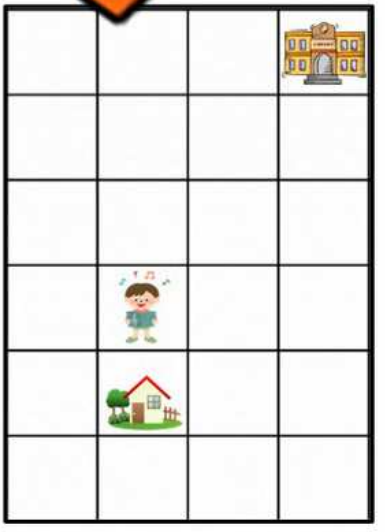
_____ - go up 4
_____ - go down 5
_____ - go left 2
_____ - enter school
_____ - go left 1
_____ - enter home



3. Go to school and then home

Code

_____ - go up 3
_____ - go down 4
_____ - go right 2
_____ - enter school
_____ - go left 2
_____ - enter home



PREVIEW

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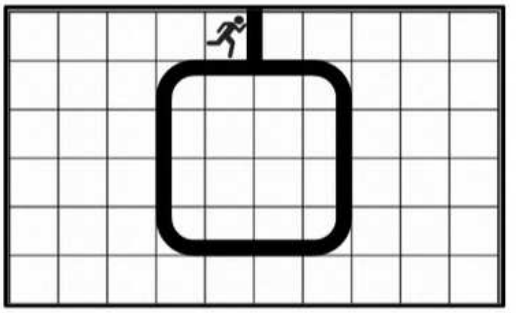
Name: _____ 182

Curriculum Connection
C3.1

Writing Code - Loops

Writing Code – Code Bank
go right (# of spaces)
go left (# of spaces)
go down (# of spaces)
go up (# of spaces)
loop ___ times

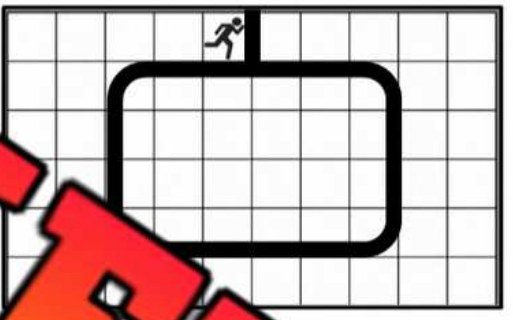


Example
loop 5 times
    go right 3
    go down 5
    go left 5
    go up 5
    go right 2
go right 1

Question t code that sends the runner around the track

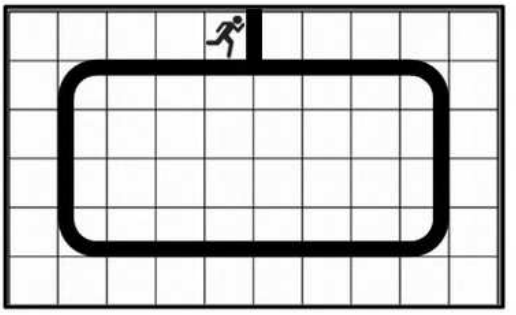
1. Use a to send r around the track 5 times. (Don't forget to cross the finish line!)

Line 1: _____
Line 2: _____
Line 3: _____
Line 4: _____
Line 5: _____
Line 6: _____
Line 7: _____



2. Use a loop to send the runner around the track 3 times. (Don't forge nish line!)

Line 1: _____
Line 2: _____
Line 3: _____
Line 4: _____
Line 5: _____
Line 6: _____
Line 7: _____



PREVIEW

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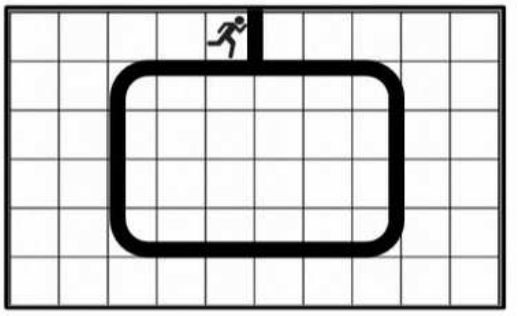
Curriculum Connection
C3.1, C3.2

Writing Code - Loops

1. Use a loop to send the runner 1600 metres.

Line 1: _____
Line 2: _____
Line 3: _____
Line 4: _____
Line 5: _____
Line 6: _____
Line 7: _____



1 lap = 200 metres

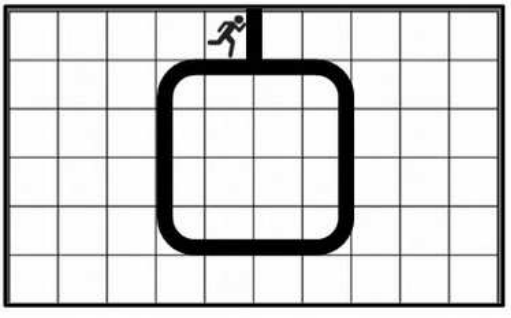
PREVIEW

2. Use a loop to send the runner 1400 metres.

Line 1: _____
Line 2: _____
Line 3: _____
Line 4: _____
Line 5: _____
Line 6: _____
Line 7: _____



1 lap = 200 metres



1 lap = 200 metres

3. Read the code and figure out how far the runner went.

Code

```
loop 15 times
        go right 3 spaces
        go down 5 spaces
        go left 5 spaces
        go up 5 spaces
        go right 2 spaces
go right 1 space
run program
```

My Answer

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Curriculum Connection
C3.1

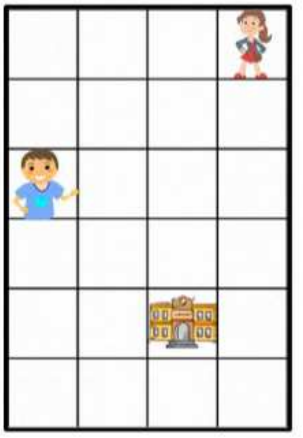
Concurrent Coding

Concurrent codes are events that happen at the same time. It is the opposite of **sequential codes**, which happen one after the other.

Example – race to school – concurrent coding

Boy	Go down 2	Go right 2	Enter school
Gi	down 4	Go left 1	Enter school

Who w s traveled – boy 4 girl 5



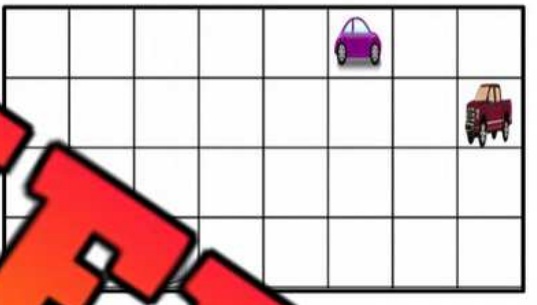
PREVIEW

Questions

two odes as the vehicles race to the store

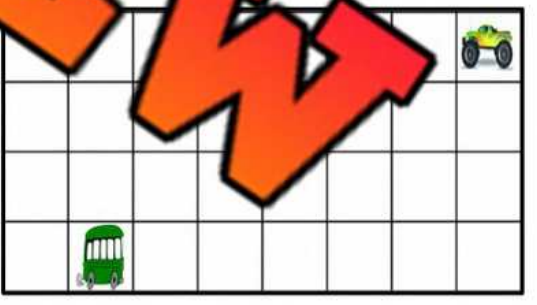
Car			
Truck			

Who won? Spaces traveled – car ____ truck ____



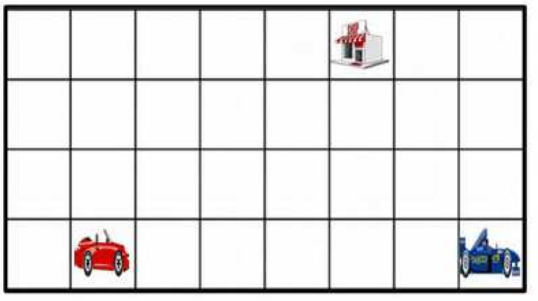
Bus			
Monster Truck			

Who won? Spaces traveled – Bus ___Monster Truck ___



F1			
Sports car			

Who won? Spaces traveled – F1 _____ Sports Car _____



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Curriculum Connection
C3.1

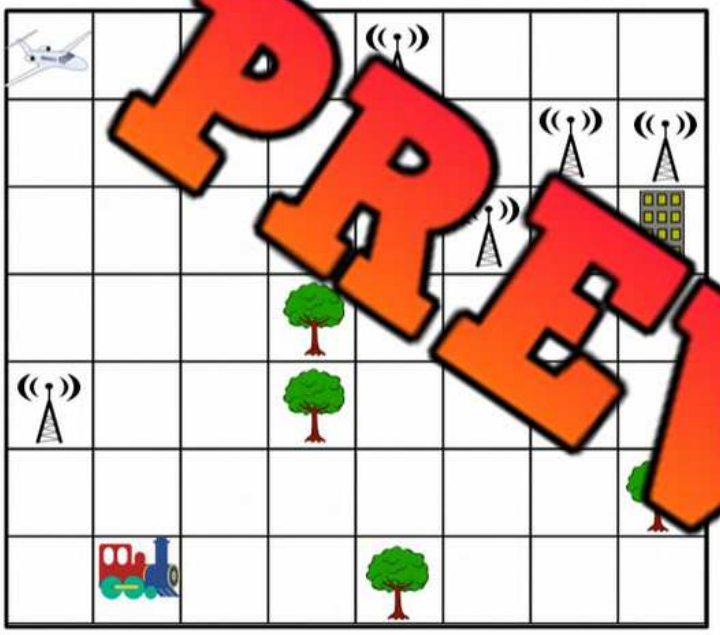
Concurrent Coding

Part 1 Write two separate codes as the train and plane race to the building

Look out for the towers and trees! Make sure you code around these obstacles.

Plane

Train



Who won?

Train = _____ spaces

Plane = _____ spaces



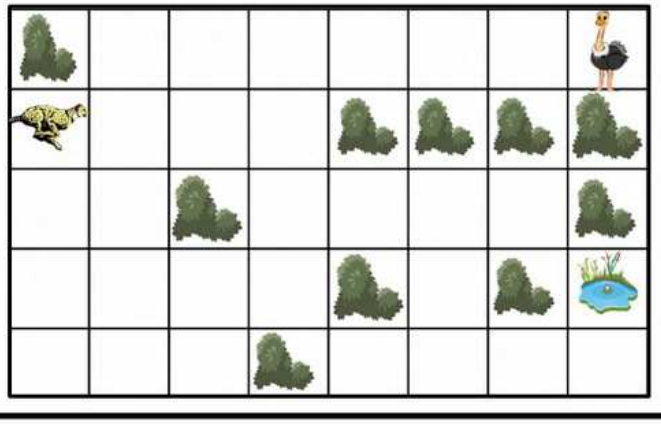
PREVIEW

Part 2 Write two separate codes as the cheetah and [illegible] watering hole

Look out for the bushes! Make sure you code around them.

Cheetah

Ostrich



Who won?



Cheetah = _____ spaces

Ostrich = _____ spaces

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Name: _____ 189

Curriculum Connection
C3.2

Introduction to If/Then Statements

An if/then statement is a *conditional* that is an action that could occur if something specific happens.
For example – If the bell goes at school, then the students go to class.



Questions Fill in the If/Then Statements with outcomes that make sense

1)	If [illegible] ings	then _____
2)	If the re[illegible]the whistle	_____
3)	If it is hot	[illegible]en _____
4)	If the alarm clock goes off in the morning	then _____
5)	If I cross the finish line first	then _____
6)	If the traffic light is red	then _____
7)	If the phone battery is 0	then _____
8)	If the time limit is reached	then _____
9)	If the SHIFT key is pressed when typing a letter	then _____
10)	If the soccer ball goes out of bounds	then _____

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Curriculum Connection
C3.1

If Statements – Conditional Coding

An if statement allows a code to be run if an event has happened. If the event does not happen, the code is not run. All interactive games use if statements. For example, when a game has a button in it, the button will have an if code. This means that if the button is pushed, then a code will run that causes something to happen.

Example Code - If player gets 50 points, then print "Great Job!"



Question: Calculate the answer to the question and then run the code

Code Written	The Computer Prints...
If answer is >75, then print "[illegible]" If answer is <75, then print "[illegible] try!" run 9 x 9 – 12	
If y is <135, then print "Better luck next time!" If y is >135, then print "Wow, great job!" run y = 7 x 11 + 50	
If player has >100 points (p), then print "You win" If player has <100 points (p), then print "You lose" run p = 28 ÷ 4 x 15	
If student mark (m) is >80%, then print "Genius!" If student mark (m) is <80%, then print "Good effort!" run m = 75/100	
If student mark (m) is >50%, then print "You passed" If student mark (m) is <50%, then print "You failed" run m = 49/90	

PREVIEW

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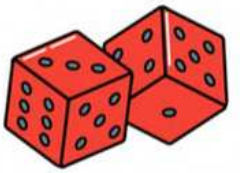
Curriculum Connection
C3.1

If Statements – Dice Game

The object of the game is to get as many points as you can. Follow the if/then statements to get points.

Instructions:
1. Start at question 1. Read the if/then statement to get points
2. Go through all 10 questions and add up your points at the end



Questions: Use a dice to play the game below. Follow the if/then codes

If/Then Code	Point Total
1) If you roll an [illegible] you get 10 points If you roll a [illegible] get 0 points	
2) If you roll a 6, then [illegible] If you don't roll a 6, then [illegible]	
3) If you roll a 3 or 4, then you get 10 [illegible] If you don't roll a 3 or 4, then you [illegible] points	
4) If you roll a 2, then you lose all your points If you roll any other number, then you get [illegible] points	
5) If you roll 3 or less, then you get 10 points If you roll 4 or more, then you get 0 points	
6) If you roll a 1 or 6, then you get 10 points If you don't roll a 1 or 6, then you get 0 points	
7) If you roll 2 or more, then you get 5 points If you roll a 1, then you lose 5 points	
8) If you roll an odd number, then you get 10 points If you roll an even number, then you get 0 points	
9) If you roll a 3, then you get 10 points If you don't roll a 3, then you get 0 points	
10) If you roll a 5 or less, then you get 20 points If you roll a 6, then you lose 10 points	

PREVIEW

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Curriculum Connection
C3.1

If Statements – Dice Game

The object of the game is to get as many points as you can. Follow the if/then statements and solve any equation from the list you are sent to. Cross out the equation once you have used it because you can only use each equation once. You earn the answer from the equation as points. Record your points in the column on the right.



Instructions Follow the if/then codes to solve equations and earn points

If/Then Code	Points
1) If you roll an e…r, then solve an equation from list 1 If you roll a…r, t…olve an equation from list 2	
2) If you roll a 3 or …, th…uation from list 3 If you roll a 2 or less, …e an …n from list 4	
3) If you roll a 6, then solve an …uati… If you roll a number other than 6, t…ve an…on from list 2	
4) If you roll an even number, then solve an …n fro… If you roll an odd number, then solve an eq…n fr…	
5) If you roll a 1 or a 6, then solve an equation from a… If you roll a 2, 3, 4, or 5, then solve an equation from li…	
6) If you roll a 2 or 5, then solve an equation from any list If you roll a 1, 3, 4, or 6, then solve an equation from list 2	
Total Points	

PREVIEW

List 1	List 2	List 3	List 4	List 5	List 6
5 + 5	15 - 5	3 x 2	25 ÷ 5	12 + 12	3 x 3
12 + 6	14 - 6	7 x 5	30 ÷ 10	23 + 5	4 x 6
13 + 8	40 - 32	3 x 6	20 ÷ 4	15 + 13	7 x 3
21 + 13	32 - 21	4 x 5	12 ÷ 2	41 - 13	40 ÷ 4
14 + 22	45 - 15	9 x 4	15 ÷ 3	50 - 10	48 ÷ 8
30 + 20	50 – 21	6 x 6	36 ÷ 6	40 - 15	9 ÷ 3

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Name: _____ 193

Curriculum Connection
C3.1

If Then Conditional Statements – Activity

Instructions Follow the if/then statements and move the bike around the grid

If/Then Conditional Statements		If/Then Conditional Statements	
1)	If y = >50, then move bike up 5 y = 15[illegible] – 10	6)	If y = >300, then move bike left 3 y = 25 x 4 x 4
2)	If t = [illegible] move bike left 6 [illegible]	7)	If t = >400, then move bike down 4 t = 250 + 250 – 75
3)	If p = >100 [illegible] bik[illegible]wn 3 p = 50 + 100	8)	If p = >600, then move bike up 2 p = 8 x 100 – 250
4)	If y = <250, then mo[illegible]ght 4 y = 10 x 10 x 2		If y = <800, then move bike right 3 [illegible]50 x 6 x 2 – 100 + 200
5)	If b = <200, then move bike up 4 b = 20 x 5 + 85	10)	[illegible]00, then move bike up 5 = 500 [illegible] (300 x 2)

PREVIEW



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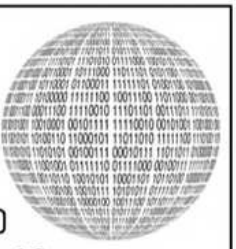
Curriculum Connection
C3.1, C3.2

What is Binary Code?

What is Binary Code?



Binary code is a coding system using the numbers 0 and 1 to represent everything a computer needs to know. The 0s and 1s are called bits.

For example

- The on button is represented by 1 while the off switch is represented by 0
- Letters are represented by 0s and 1s. A = 01000001 or 1, B = 01000010 or 10
- Numbers are also represented by 0s and 1s. The number 1 = 1, 2 = 10, 3 = 11, 4 = 100

Why Do Co s Use Binary?

Compute ary to make sense of complicated data. The binary counting system is the si hod available because it uses only two numbers. Computers can proce s 0s and to allow them to understand what we are sending to it.

Binary Code Al

Below you can h nary nu r each letter and number in our alphabet. Binary is read from right You uppercase and lowercase have their own binary code because they are ff n to the computer. The circles also represent binary. The blac epre ile the white circles represent 0s.

PREVIEW

01000001	A	○●○○○○○●	0000			00110000	0	○○●●○○○○
01000010	B	○●○○○○●○	011000			00110001	1	○○●●○○○●
01000011	C	○●○○○○●●	011000			00110010	2	○○●●○○●○
01000100	D	○●○○○●○○	01100100	d		10011	3	○○●●○○●●
01000101	E	○●○○○●○●	01100101	e		00	4	○○●●○●○○
01000110	F	○●○○○●●○	01100110	f			5	○○●●○●○●
01000111	G	○●○○○●●●	01100111	g		00110		○○●●○●●○
01001000	H	○●○○●○○○	01101000	h		011		○○●●○●●●
01001001	I	○●○○●○○●	01101001	i	○●●○●○○●	001		○○●●●○○○
01001010	J	○●○○●○●○	01101010	j	○●●○●○●○	00		○○●●●○○●
01001011	K	○●○○●○●●	01101011	k	○●●○●○●●			
01001100	L	○●○○●●○○	01101100	l	○●●○●●○○			
01001101	M	○●○○●●○●	01101101	m	○●●○●●○●			
01001110	N	○●○○●●●○	01101110	n	○●●○●●●○			
01001111	O	○●○○●●●●	01101111	o	○●●○●●●●			
01010000	P	○●○●○○○○	01110000	p	○●●●○○○○			
01010001	Q	○●○●○○○●	01110001	q	○●●●○○○●			
01010010	R	○●○●○○●○	01110010	r	○●●●○○●○			
01010011	S	○●○●○○●●	01110011	s	○●●●○○●●			
01010100	T	○●○●○●○○	01110100	t	○●●●○●○○			
01010101	U	○●○●○●○●	01110101	u	○●●●○●○●			
01010110	V	○●○●○●●○	01110110	v	○●●●○●●○			
01010111	W	○●○●○●●●	01110111	w	○●●●○●●●			
01011000	X	○●○●●○○○	01111000	x	○●●●●○○○			
01011001	Y	○●○●●○○●	01111001	y	○●●●●○○●			
01011010	Z	○●○●●○●○	01111010	z	○●●●●○●○			





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Writing Binary

When these letters are typed, what does the computer see?

Input	Binary Code Version
Example Sam	01010011 01100001 01101101
Your Name (Choose a [illegible] form)	
Canada	
I am 11	

Reading Binary

Read the binary code and decid[illegible] comp[illegible]as told
Hint – it is all t[illegible]

Binary Code Version	Input
01100011 01101111 01100100 01100101	
01101101 01100001 01110100 01101000	
01110011 01100011 01101001 01100101 01101110 01100011 01100101	
01100110 01110101 01101110	

PREVIEW

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Curriculum Connection
C3.1, C3.2

What is Binary Code?



Writing Binary

Shade in the 1s and leave the 0s white

Input	Binary Code Version
Example Sam	
code	
binary	
bit	

PREVIEW

Reading Binary

Read the binary code and [illegible] was told
Hint – it is all [illegible] case

Binary Code Version	

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Curriculum Connection
C3.1

Writing Code – TV Remote

How Does a TV Remote Work?

The battery inside the remote gives it electricity. The remote has an LED light that sends binary code to the TV. The TV has been programmed to understand the binary code it is being sent.



For example,

Remote Code
if [on] b[illegible]s pressed
then [illegible] 01101110 to the television

TV Code
if [on] but[illegible]ed
then [close] the [illegible]ch

PREVIEW

Binary When the remo[illegible]ton [illegible]t binary code is sent to the TV?



Remote Code
if volume [up] button is pres[illegible]
then send [illegible]e televi[illegible]





Remote Code
if channel [down] button is pressed
then send [ ] to the television





Remote Code
if [off] button is pressed
then send [ ] to the television



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Curriculum Connection
C3.1

Coding Challenge: Metres and Centimetres Converter

Objective What are we learning about?

You're going to build a simple program that can convert between metres (m) and centimetres (cm). Your program will ask the user what kind of conversion they want to do, take their measurement, and show the answer.



Instructio How you will complete the activity

1. You going simple program that asks the user whether they want to convert f ce tres or from centimetres to metres. Based on what they choos ogra he right math and show the answer.
2. Start by creating s es. Yo d ones to store the user's input (like choice, metres, centim on result of the conversion (like converted).
3. Ask the user what they want to do can use like ask, prompt, or input. Let them choose between two options. For e e, the type "A" to convert metres to centimetres or "B" to convert ce res t
4. Use a conditional statement to check their answe if, else then block to run different code depending on whether they chose
5. If they chose A, ask them to enter a number in metres. Multiply y 100 to convert to centimetres and save the result.
6. If they chose B, ask them to enter a number in centimetres. Multiply that number by 0.01 to convert to metres and save the result.
7. Use a print, output, or say command to show the answer back to the user. Make sure it clearly explains what the number means.
8. Test your program by running it and trying different answers. Make sure the output makes sense and the math is correct.
9. If you finish early, try making your code fancier: you could add more instructions, use a loop to repeat the program, or add sound effects.

PREVIEW

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C3.1

Example Below is an example program that performs this task

Line #	Code (Pseudocode Style)
1	set **metres** = 0
2	set **centimetres** = 0
3	set **convertMetres** = 0
4	**vertCentimetres** = 0
5	set **key** "blank"
6	rep **eyPre** "A" or **keyPressed** = "B"
7	outp ype om metres to centimetres. Type B to convert from res to "
8	store user input **keyP**
9	if **keyPressed** = "A" then
10	output "Enter measurement in es:"
11	store user input as **metres**
12	set **convertCentimetres** = **metres** × 100
13	output **metres** + "metres is" **convertCentimetres** "centimetres."
14	else
15	output "Enter measurement in centimetres:"
16	store user input as **centimetres**
17	set **convertMetres** = **centimetres** × 0.01
18	output **centimetres** "centimetres is" **convertMetres** "metres."

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C3.1

Program Use the space below to write your code using lines of code or a flow chart



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Curriculum Connection
C3.1

Interpreting Code – Heads or Tails Probability

Analyze The code below keeps track of a user flipping a coin 10 times. It uses a counter to add 1 each time a heads or tails happens.

```
set heads = 0
set tails = 0
set flip = 0
[illegible]
repeat [illegible]es
    f[illegible]m number between 0 and 1
        [illegible] = 1 th[illegible]
        he[illegible]s [illegible] + 1
else
        tails = tails + 1
output "Number of heads:" heads
output "Number of tails:" tails
```

PREVIEW

Questions Answer the questions below

1) Why do we set the variables heads and tails to zero at the b[illegible]
2) What does the repeat 10 times command tell the program to do? Why is 10 used?
3) What does coin == 1 then mean?

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Curriculum Connection
C3.1

Questions | Answer the questions below

4) If 1 == heads, then why isn't 2 used for tails?
5) What d[illegible]the line heads = heads + 1 actually do?
6) How could y[illegible]ge thi[illegible]perform...

100 coin flips?	
1 000 coin flips?	
10 000 coin flips?	

7) How does the program "know" whether to add to heads[illegible]r ta[illegible]ip?
8) How could you modify the program to repeat until one side reaches 5 instead of using repeat 10 times?

PREVIEW

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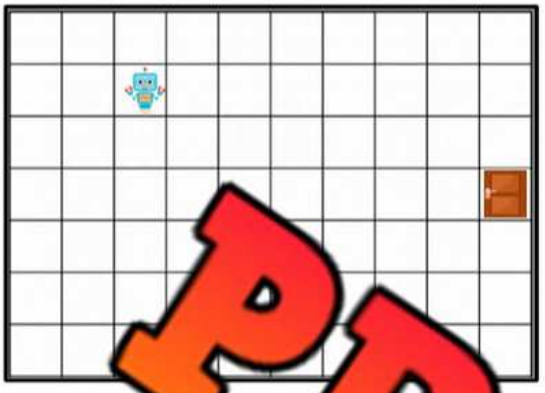
Coding Quiz

Part 1 — Write the code below



1. Write the code that gets the robot to the door

Line 1: _____

Line 2: _____

Line 3: _____

Robot moved

2. Write the code [illegible] the store and then home.

Line 1: _____

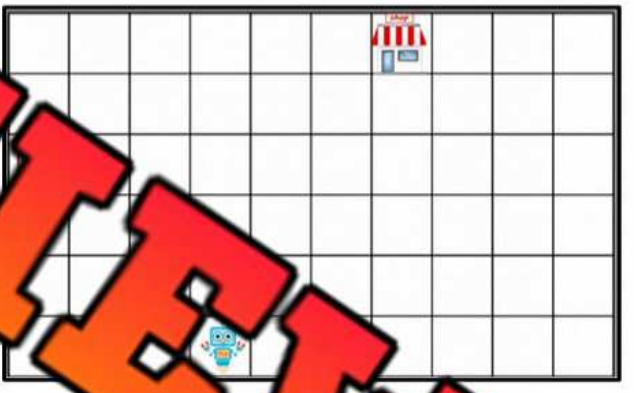
Line 2: _____

Line 3: _____

Line 4: _____

Line 5: _____

Line 6: _____



Ro[illegible]ov[illegible]res

PREVIEW

Part 2 — Put the scrambled code in the correct order by lab[illegible]ps 1-6

3. Go to school and then home

Code

_____ - go up 4

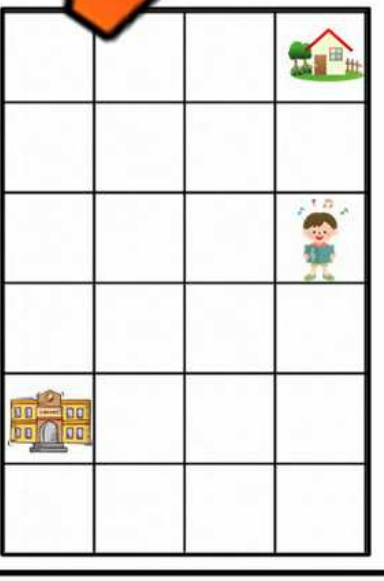
_____ - go down 2

_____ - enter school

_____ - go left 3

_____ - enter home

_____ - go right 3



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Part 3 — Write code that sends the runner around the track

Use a loop to send the runner 5000 metres.

Line 1: _____

Line 2: _____

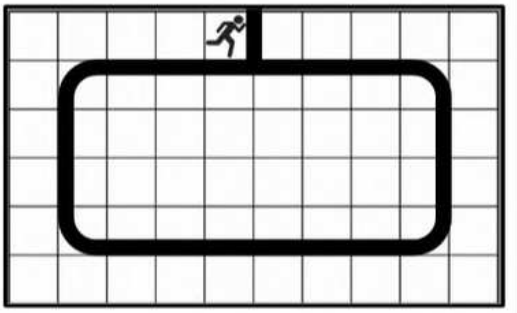
Line 3: _____

Line 4: _____

Line 5: _____

Line 6: _____

Line 7: _____



1 lap = 250 metres

Part 4 — Write the code the computer would reply with based on the code written

Code Written	The Computer Prints
x = 236 y = x + 28 print (y)	— — —
x = 310 y = x - 18 print (y)	— —

Code Written	The Computer Prints
y =	—
x y = x print (y)	

Part 5 — Calculate the answer to the question and then run the code

Code Written	The Computer Replied
If player has >100 points (p), then print "You win" If player has <100 points (p), then print "You lose" run p = 48 ÷ 6 x 10	
If student mark (m) is >50%, then print "Genius!" If student mark (m) is <50%, then print "Good effort!" run m = 30/70	

PREVIEW

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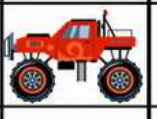
Part 6	Follow the if/then statements and move the bike around the grid

If/Then Conditional Statements		If/Then Conditional Statements	
1)	If y = >60, then move bike up 5 y = 35 + 40 – 10	6)	If y = >350, then move bike right 7 y = 100 x 3 + 65
2)	If t = >90, then move bike left 6 t = 10[illegible] x 3	7)	If t = >400, then move bike up 4 t = 250 + 350 – 125
3)	If p [illegible] ove bike down 3 [illegible] + 100 –	8)	If p = >500, then move bike left 2 p = 7 x 100 – 250
4)	If y = <25[illegible] ve bik y = 20 x 5 x 3	9)	If y = <750, then move bike left 4 y = 50 x 8 x 2 – 100
5)	If b = <300, then move b[illegible]wn b = 20 x 5 + 185		b = >1000, then move bike down 5 b [illegible] + 1000 – (100 x 2)

PREVIEW



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