

Patterns, Pairs & Variables

5th
Grade

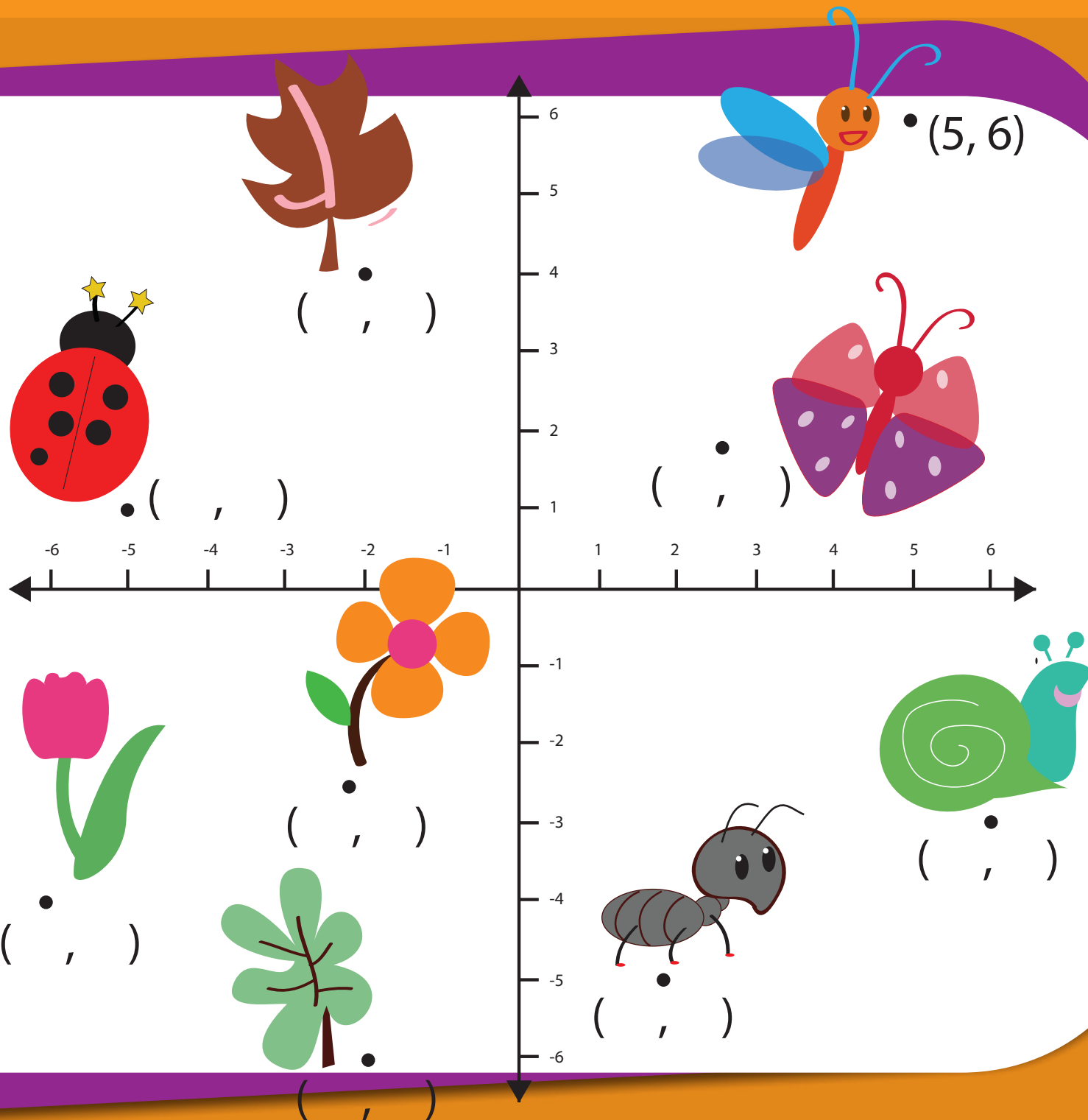


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NUMBER PATTERNS

Find out what number is added or subtracted to get the next number. Repeat the process to fill in the missing numbers. Write the pattern used on the blank lines to the right. (Hint: The patterns can be whole numbers OR fractions.)

Example:

5 10 15 20 25 30 35 40 45 _____ +5

1.		4	7	10				22	_____
2.	3		11	15		23			_____
3.	5		11		17		23		_____
4.		8		4		0		-4	_____
5.	56		32		8		-16		_____
6.	45		37		29	25	21		_____
7.	$\frac{5}{2}$	4	$\frac{11}{2}$	7					_____
8.		9		8	$\frac{15}{2}$			6	_____
9.	11		37			76	89		_____
10.	15			33		45		57	_____
11.	$\frac{7}{2}$	6		11		16		21	_____
12.	20				15		$\frac{50}{4}$	$\frac{45}{4}$	_____
13.			57	41		9		-23	_____
14.	-52		2		56	83			_____
15.	$\frac{1}{5}$	1	$\frac{9}{5}$				5		_____

NUMBER PATTERNS

Find out what whole number OR fraction is multiplied or divided to get the next number. Repeat the process to fill in the missing numbers. Write down the pattern used on the blank lines to the right.

Example:

8	12	18	27	$\frac{81}{2}$	$\frac{243}{4}$	$\frac{729}{8}$	$\times\left(\frac{3}{2}\right)$
---	----	----	----	----------------	-----------------	-----------------	----------------------------------

1.	$\frac{1}{2}$	$\frac{3}{2}$	$\frac{9}{2}$	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	$\frac{243}{2}$	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	$\frac{2187}{2}$	<hr style="border: 0; border-top: 1px solid orange; width: 100%;"/>
2.	5	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	20	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	80	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	320	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<hr style="border: 0; border-top: 1px solid orange; width: 100%;"/>
3.	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	1250	1000	800	640	512	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<hr style="border: 0; border-top: 1px solid orange; width: 100%;"/>
4.	1000	500	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	125	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	$\frac{125}{4}$	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<hr style="border: 0; border-top: 1px solid orange; width: 100%;"/>
5.	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	11	33	99	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	891	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	8019	<hr style="border: 0; border-top: 1px solid orange; width: 100%;"/>
6.	7	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	56	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	224	448	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<hr style="border: 0; border-top: 1px solid orange; width: 100%;"/>
7.	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	18	27	$\frac{81}{2}$	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<hr style="border: 0; border-top: 1px solid orange; width: 100%;"/>
8.	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	2916	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	1296	864	576	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<hr style="border: 0; border-top: 1px solid orange; width: 100%;"/>
9.	$\frac{3}{2}$	3	6	12	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<hr style="border: 0; border-top: 1px solid orange; width: 100%;"/>
10.	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	14	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	56	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	896	<hr style="border: 0; border-top: 1px solid orange; width: 100%;"/>
11.	81	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	9	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	1	$\frac{1}{3}$	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<hr style="border: 0; border-top: 1px solid orange; width: 100%;"/>
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13.	$\frac{1}{128}$	$\frac{1}{16}$	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	4	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	256	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	16384	<hr style="border: 0; border-top: 1px solid orange; width: 100%;"/>
14.	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	2500	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	100	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	4	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	$\frac{4}{25}$	<hr style="border: 0; border-top: 1px solid orange; width: 100%;"/>
15.	$\frac{2}{81}$	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	2	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	162	1458	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<div style="background-color: #f4a460; width: 40px; height: 20px;"></div>	<hr style="border: 0; border-top: 1px solid orange; width: 100%;"/>

NUMBER PATTERNS

Treasure-hunter Jack has received a secret message in a sequence of numbers. Decoded, it will tell him the location of the world's largest diamond, the Golden Jubilee. The message is encoded in a "letter number" cipher. This is when letters are replaced as numbers. However only the MISSING NUMBERS will reveal the true location. Find out what these numbers are!

(Hint: The numbers follow a pattern. You will have to subtract, divide, add or multiply by a whole number or fraction to find the missing numbers.)

Example:

(+5) 5 10 15 20 25 Then the letter is Y

A	B	C	D	E	F	G	H	I	J	K	L	M
1	2	3	4	5	6	7	8	9	10	11	12	13
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
14	15	16	17	18	19	20	21	22	23	24	25	26

1. 5 10 40 80

2. 29 22 15

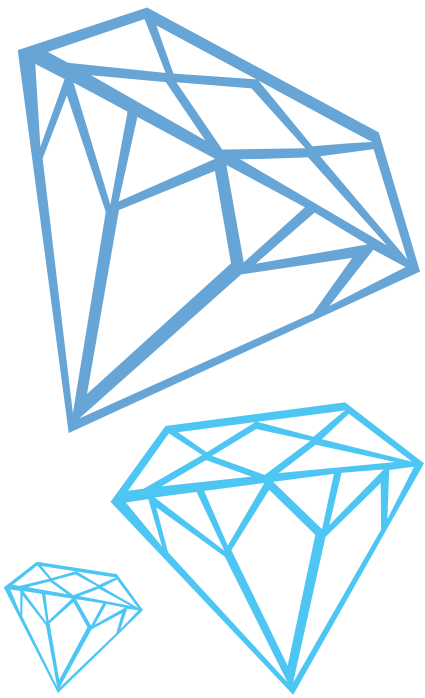
3. $\frac{27}{2}$ 6 4 $\frac{8}{3}$

4. -60 -36 -12 36

5. 81 27 9 3

6. 3024 504 84 $\frac{7}{3}$

7. 20 16 12 8

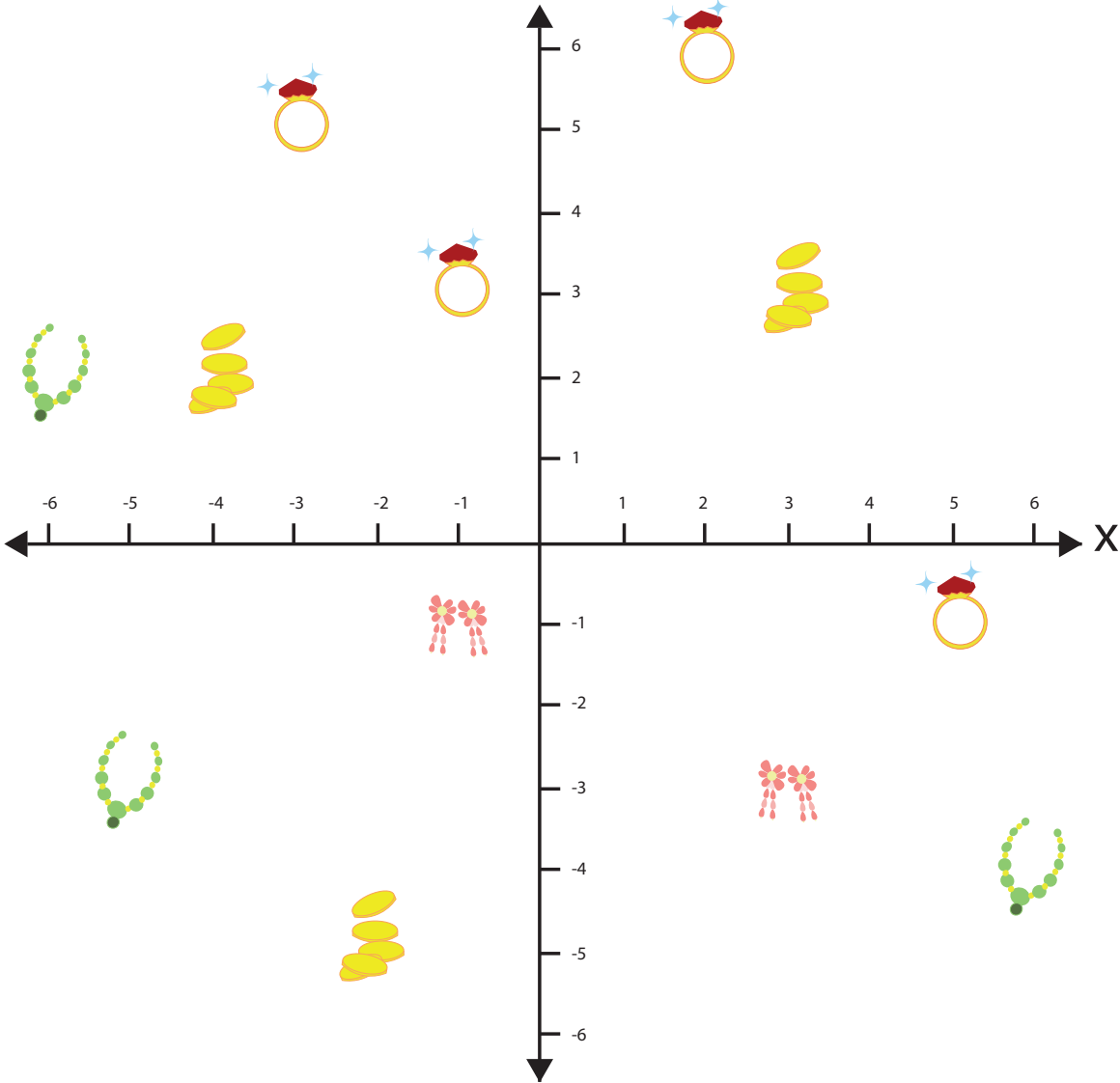



Where is the location of the Golden Jubilee Diamond?

- _____
- 1 2a 2b 3 4 5 6 7

Coordinates Treasure Hunt!

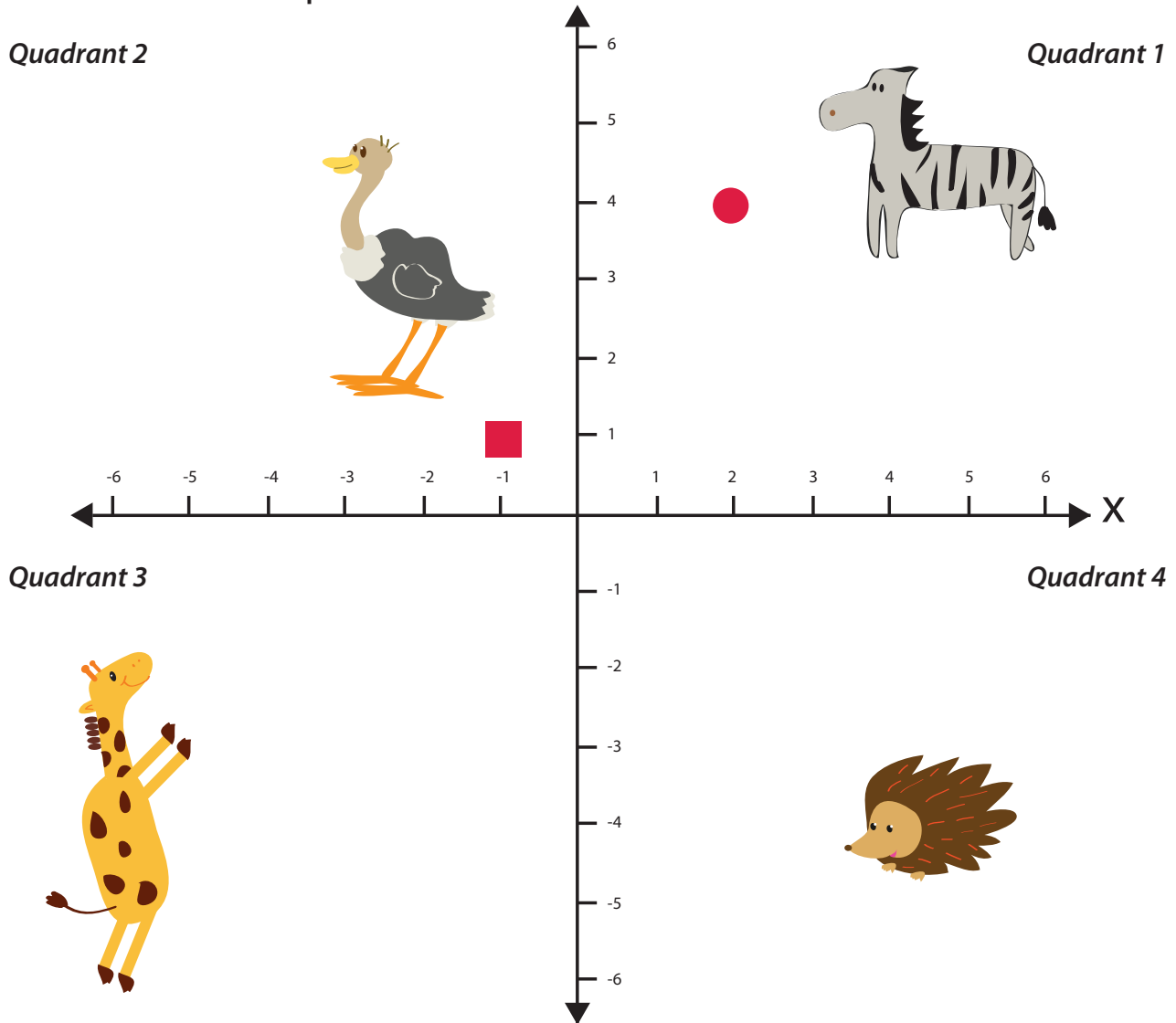
Help the treasure hunter by looking at the coordinate plane below and answering the questions.



1. What treasure is located at (5, -1)?
2. What treasure is located at (-2, -5)?
3. What treasure is located at (6, -4)?
4. Write the coordinates of the earrings below. 
5. Which quadrant has the most treasure in it?

Name the Quadrant

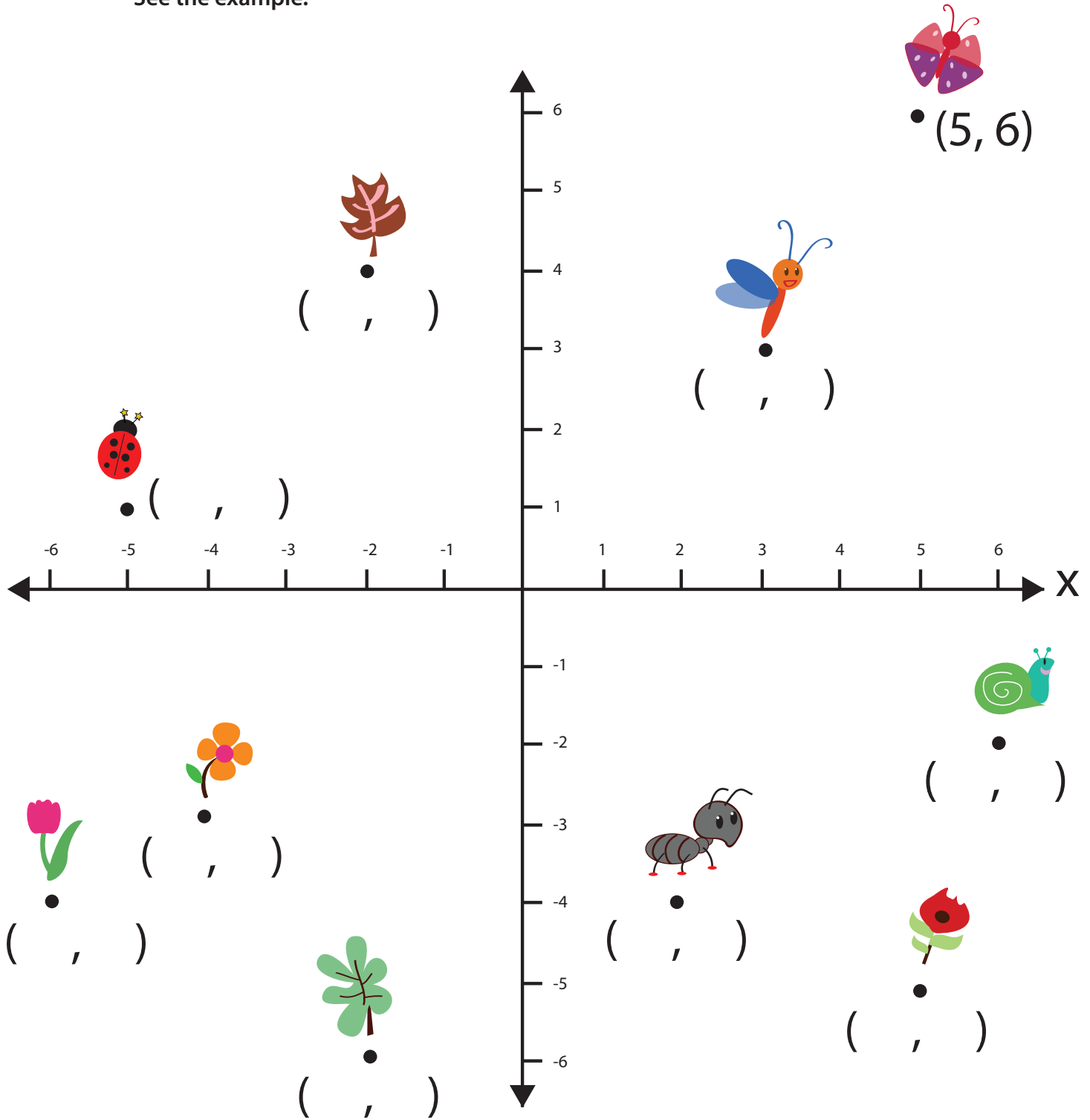
The coordinate plane is divided into four quadrants. Look at the coordinate plane below and answer the questions.



1. Which quadrant is the giraffe in?
2. Which quadrant is the zebra in?
3. Which quadrant is the ostrich in?
4. Draw a triangle and a rectangle in quadrant four.
5. Draw a circle and a square in quadrant three.
6. The coordinates of the square in quadrant 2 are $(-1, 1)$.
What are the coordinates of the circle in quadrant one?

Write the Coordinates

Look at the position of each object below, and write the coordinates in the parentheses.
See the example.



Which quadrant does not contain an insect?

Expression vs. Equation

An expression in math is a sentence containing numbers and the operations. Below are examples of expressions:

$2 + 3$

$17 - 16 + 2$

$\frac{2}{5} \times \frac{6}{6}$

6

$(3 \times 5) - (6 \times 2)$

$y - 20$

An equation is the statement of numbers, expressions, operations that are equal.
Examples:

$2 + 3 = 4 + 1$

$17 - 16 + 2 = 3$

$\frac{2}{5} \times \frac{6}{6} = \frac{12}{30}$

$6 = 6$

$(3 \times 5) - (6 \times 2) = 15 - 12$

$y - 20 = 10 + x$

Look at the statements below. Write "ex" if the statement is an expression.
Write "eq" if the statement is an equation.

_____ $7 + f$

_____ $6x - 6y - 6z$

_____ $12(7 - 3)$

_____ $\frac{(40 - 5)}{7} = 5$

_____ $(6 \times 4) = (3 \times 8)$

_____ 8

_____ $(5 \times 5 \times 5)$

_____ $0.1 + 0.5 = 0.3 + 0.3$

_____ $\frac{9}{2} \times \frac{4}{3} = 6$

_____ $(2 \times 2) - (1 \times 1)$

Challenge

Complete the equation by writing the expression on the other side of equation. See the example.

$60 + 4 = \underline{8 \times 8}$

$25 - 15 = \underline{\hspace{2cm}}$

$4 \times 2 = \underline{\hspace{2cm}}$

$\frac{12}{4} = \underline{\hspace{2cm}}$

Writing Expressions With Variables #1

An expression in math is a sentence containing numbers and the operations. Below are examples of expressions:

$$2 + 3$$

$$17 - 16 + 2$$

$$\frac{2}{5} \times \frac{6}{6}$$

$$6$$

$$(3 \times 5) - (6 \times 2)$$

$$y - 20$$

A variable represents the unknown number in the expression or equation. For example, $4 \times t = 12$. The letter "t" represents the number which multiplies by 4 to equal 12.

Read the sentences below and write an expression. See the example.

Robin has 10 chocolates and Martin has m chocolates. Write an expression of chocolates that Martin and Robin have together.

Robin has 10
Martin has m

The expression is $10 + m$



Bobby grows 20 carrots and Tommy grows k carrots. Write the expression of carrots that both Bobby and Tommy have.



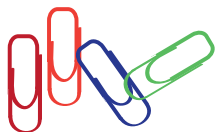
Julie has 7 jelly beans. She gave y jelly beans to Susie. Write the expression of jelly beans that she has left.



Sally ate 2 pieces of cake in the morning and n pieces in the evening. Write the expression for the amount of cake she had today.



Ronny had 12 paper clips. He lost p of them. Write the expression of paper clips Ronny has left.



Writing Expressions With Variables #2

An expression in math is a sentence containing numbers and the operations. Below are examples of expressions:

$$2 + 3$$

$$17 - 16 + 2$$

$$\frac{2}{5}x$$

$$6$$

$$(3x) - (6x + 2)$$

$$y - 20$$

A variable is a letter (x , y , t , etc.) that represents the unknown number in an expression or equation. When a variable is next to a number, it means multiply. For example: $4t = 12$ means 4 multiplied by t equals 12.

Read the sentences below and write an expression. See the example below.

There are y letters in the bag. They are divided into 4 equal groups. Write an expression of the letters after dividing.

Number of letters is y
Divided into 4

The expression of division is $\frac{y}{4}$



There are 20 people in the room. They are divided into m equal groups. Write the division expression of the number of people in each group.



Ashley has 25 flowers. The number of flowers Sam has is z times more than what Ashley has. Write a multiplication expression of flowers that Sam has.



A piece of wood is 20 feet long. It was cut into k equal pieces to make a track. Write a division expression of the length of each piece of wood.



Mary has p handbags. Lynn has 2 times more than Mary. Write the multiplication expression of the handbags that Lynn has.



Algebraic Expressions

Simplify the following expressions.

1.) $5a + 6a =$

2.) $3a + a =$

3.) $8a - 3a =$

4.) $10a - 2a =$

5.) $9a + 4a =$

6.) $11a - 7a =$

7.) $4b + 3b =$

8.) $12b - 6b =$

9.) $5b + 9b =$

Complete the following expressions.

1.) $12 \times 3 - 5 + 4 =$

2.) $4 + 7 \times 2 - 8 =$

3.) $5 - 7 + 2 \times 10 =$

4.) $15 \div 3 + 8 \times 5 =$

5.) $11 \times 3 - 12 \div 4 =$

6.) $5 + 9 - 16 \div 2 =$

Combine like terms to simplify the following expressions.

1.) $3a(a + 4) - 2a + 7 =$

2.) $5a + 3a - 15 \div 3 =$

3.) $4(3 + 9) + 10a - 4a =$

4.) $(21 \div 7)(4a + a) - 12 =$

5.) $17 + 4(3 + a) - a =$

6.) $10a - 4a + 27 \div 3 =$

Algebra Action!

Value of The Expression

A variable represents the unknown number in the expression or equation.
For example, $4 \times t = 12$. The letter "t" represents the number which multiplies by 4 to equal 12.

An expression in math is a sentence containing numbers and the operations. Below are examples of expressions:

$$2 + 3$$

$$17 - 16 + 2$$

$$\frac{2}{5}x$$

$$6$$

$$(3 \times 5) - (6 \times 2)$$

$$y - 20$$

We can find the value of the expression $7 + y$ by placing the variable with the number.
For example: if $y = 5$

1. Put 5 in the place of y

$$7 + y$$

$$7 + 5$$

2. Calculate it

$$7 + 5 = 12$$

Find the value of the expressions below. Show your work.

$$17 - h$$

If $h = 4$

$$4 + y + 7$$

If $y = 8$

$$(12 - b) + 5$$

If $b = 3$

$$(5 \times m) + 1$$

If $m = 6$

$$(4 \times p) \times 2$$

If $p = 10$

$$20 + (6 \times w)$$

If $w = 3$

Ladybug Math

$9x = 81$

$99 - x = 66$

$8 + 18/x = 14$

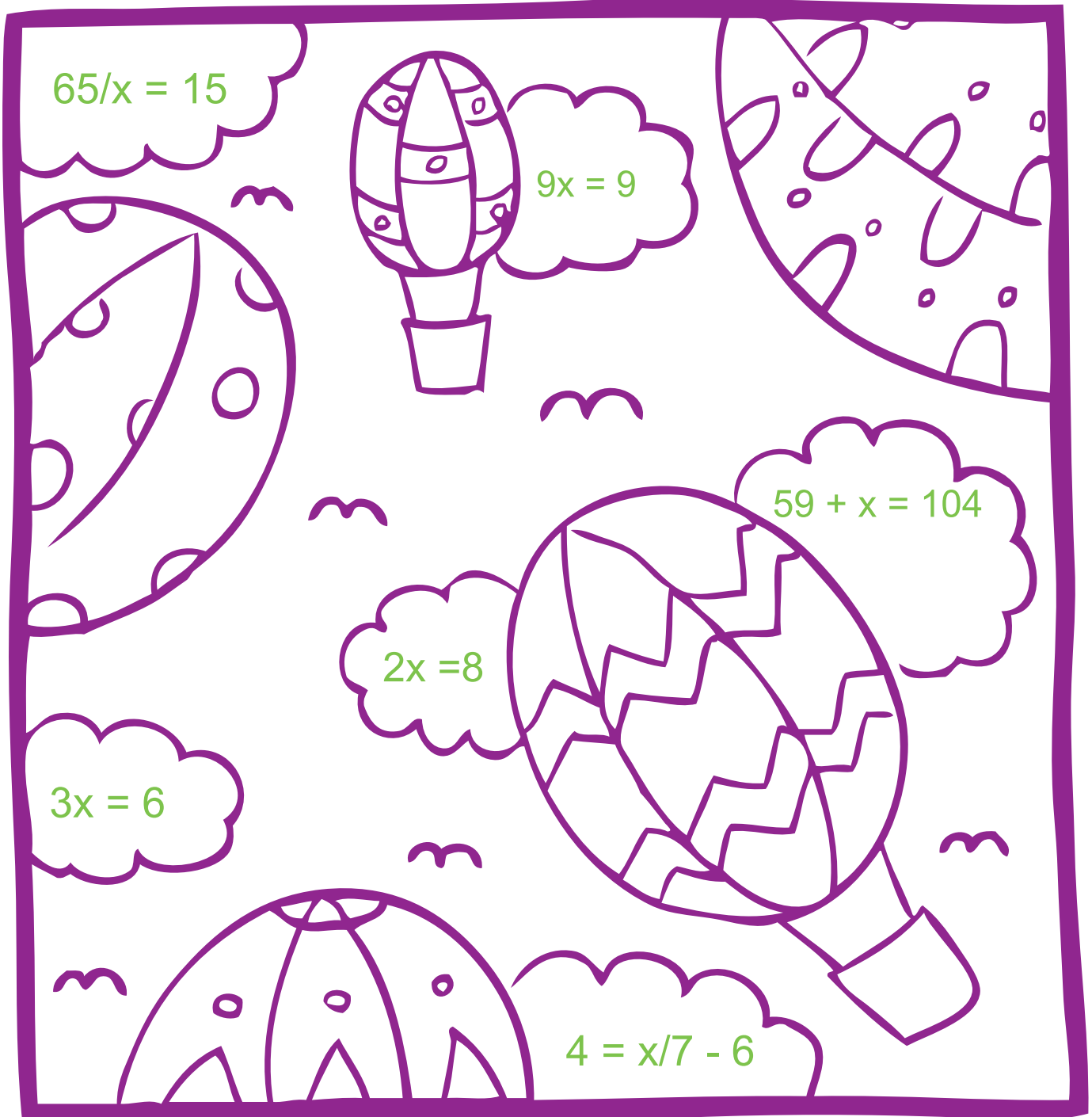
$x - 49 = 29$

Note: More worksheets at www.education.com/worksheets

Instructions:

Complete each math problem and color the page!

Air Balloon Math

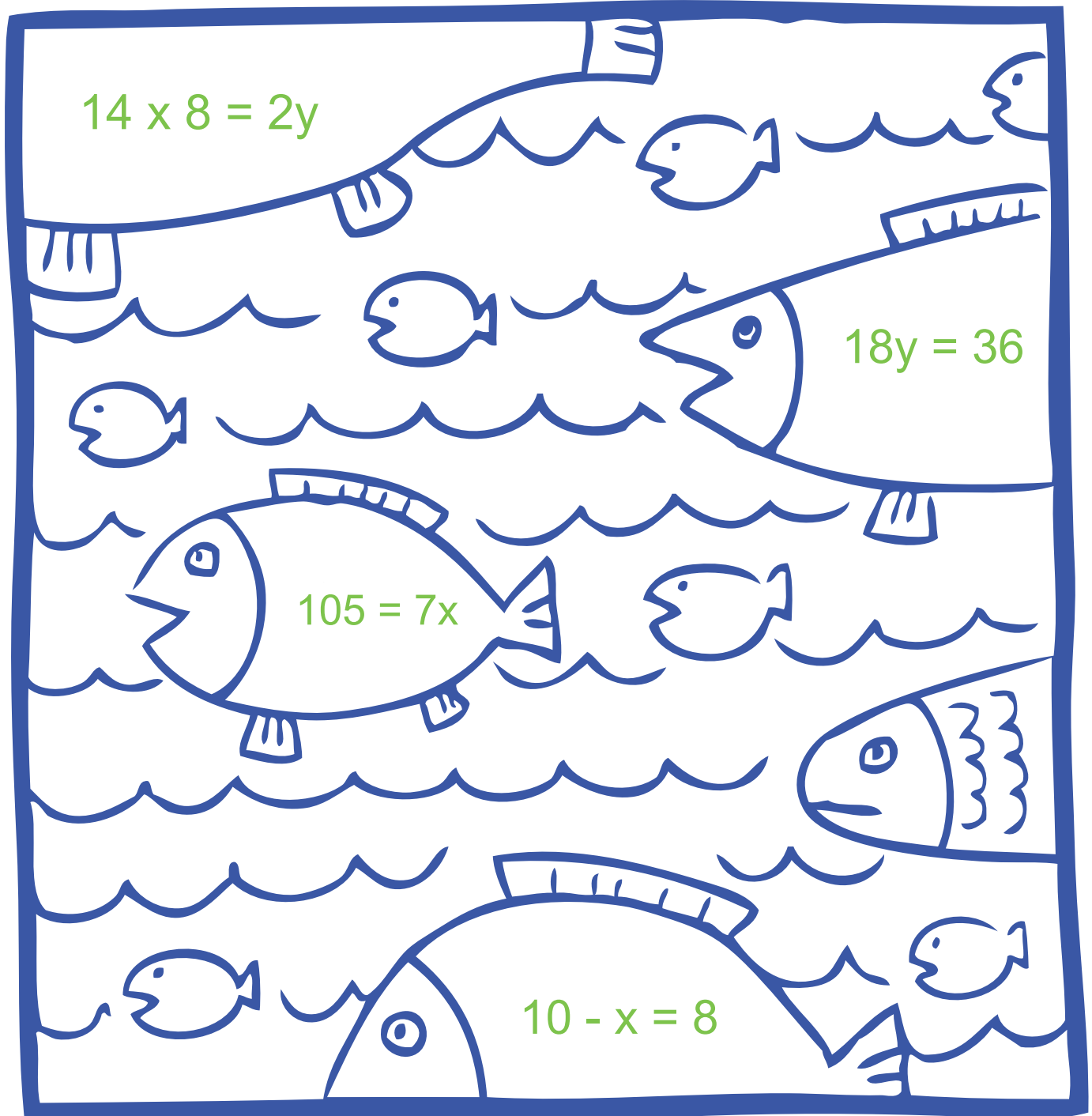


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Fish Math

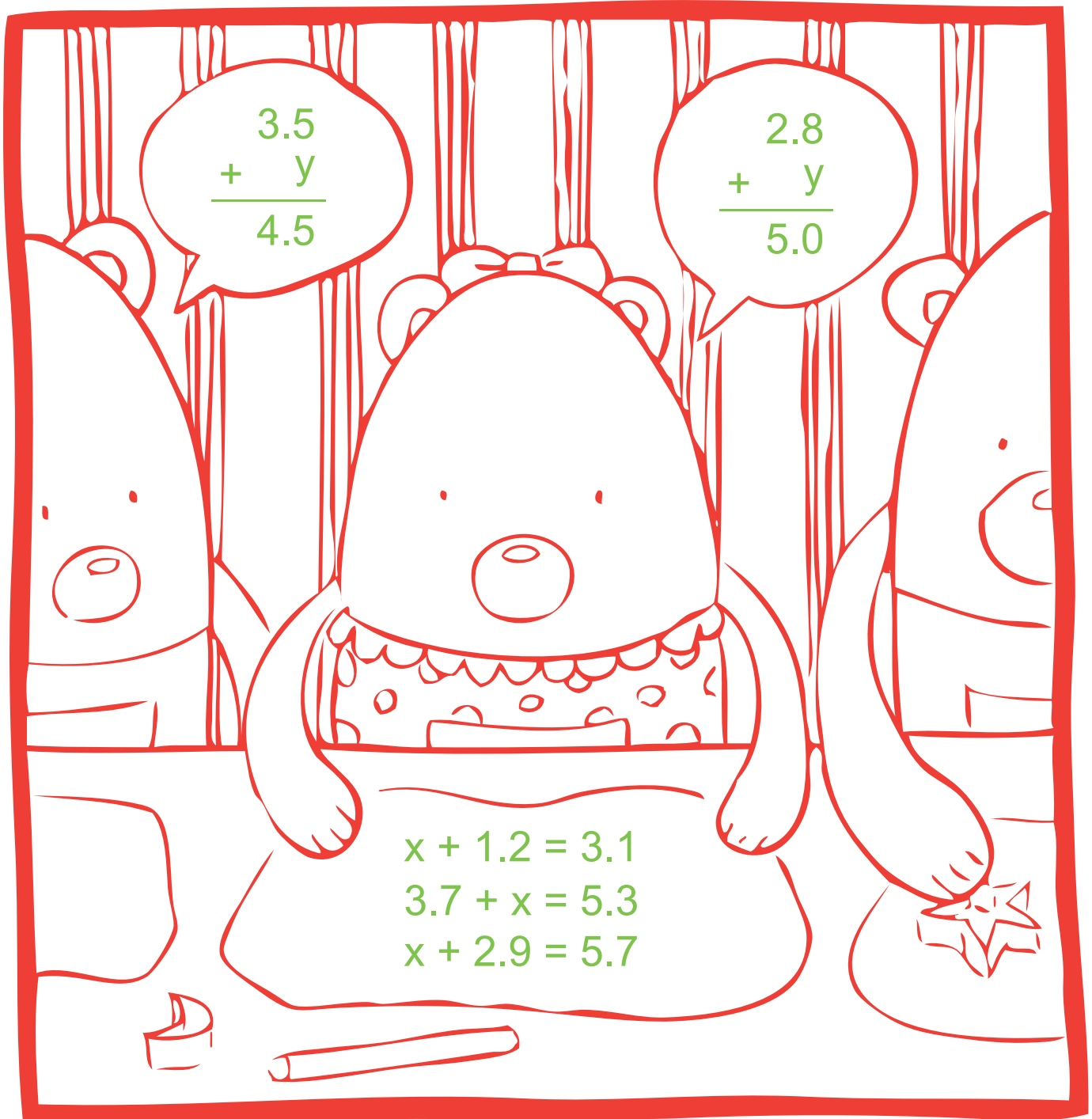


Note: More worksheets at www.education.com/worksheets

Instructions:

Complete each math problem and color the page!

Bear Math



Note: More worksheets at www.education.com/worksheets

Instructions:

Complete each math problem and color the page!

Forest Math

$14 \times 8 = 2y$

$\begin{array}{r} 8 \\ \times 4 \\ \hline \end{array}$

$\begin{array}{r} 3 \\ \times 6 \\ \hline \end{array}$

$\begin{array}{r} 4 \\ \times 7 \\ \hline \end{array}$

$\begin{array}{r} 5 \\ \times 7 \\ \hline \end{array}$

$54 + y = 23 \times 5$
 $41 + 19 = 30y$
 $23 \times 2 = y + 12$

Note: More worksheets at www.education.com/worksheets

Instructions:

Complete each math problem and color the page!

Star Math

$$\begin{array}{r} 3.2 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 2.1 \\ \times 4 \\ \hline \end{array}$$

$$y + 33 = 52 \times 3$$

$$\begin{array}{r} 3.2 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 8.5 \\ \times 5 \\ \hline \end{array}$$

$$21y = 30 + 33$$

$$y + 34 = 31 \times 4$$

$$\begin{array}{r} 5.4 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 1.1 \\ \times 5 \\ \hline \end{array}$$

Note: More worksheets at www.education.com/worksheets

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Great job!

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Answer Sheet

NUMBER PATTERNS

Find out what number is added or subtracted to get the next number. Repeat the process to fill in the missing numbers. Write the pattern used on the blank lines to the right. (Hint: The patterns can be whole numbers OR fractions.)

Example:

5 10 15 20 25 30 35 40 45 _____ +5

1.	1	4	7	10	13	16	19	21	+3
2.	3	7	11	15	19	23	27	31	+4
3.	5	8	11	14	17	20	23	26	+3
4.	10	8	6	4	2	0	-2	-4	-2
5.	56	44	32	20	8	-4	-16	-28	-12
6.	45	41	37	33	29	25	21	17	-4
7.	$\frac{5}{2}$	4	$\frac{11}{2}$	7	$\frac{17}{2}$	10	$\frac{23}{2}$	13	$+\frac{3}{2}$
8.	$\frac{19}{2}$	9	$\frac{17}{2}$	8	$\frac{15}{2}$	7	$\frac{13}{2}$	6	$-\frac{1}{2}$
9.	11	24	37	50	63	76	89	102	+13
10.	15	21	27	33	39	45	51	57	+6
11.	$\frac{7}{2}$	6	$\frac{17}{2}$	11	$\frac{27}{2}$	16	$\frac{37}{2}$	21	$+\frac{5}{2}$
12.	20	$\frac{75}{4}$	$\frac{70}{4}$	$\frac{65}{4}$	15	$\frac{55}{4}$	$\frac{50}{4}$	$\frac{45}{4}$	$-\frac{5}{4}$
13.	89	73	57	41	25	9	-7	-23	-16
14.	-52	-25	2	29	56	83	110	137	+27
15.	$\frac{1}{5}$	1	$\frac{9}{5}$	$\frac{13}{5}$	$\frac{17}{5}$	$\frac{21}{5}$	5	$\frac{29}{5}$	$+\frac{4}{5}$

Answer Sheet

NUMBER PATTERNS

Find out what whole number OR fraction is multiplied or divided to get the next number. Repeat the process to fill in the missing numbers. Write down the number pattern on the right blank lines.

Example:

$$8 \quad 12 \quad 18 \quad 27 \quad \frac{81}{2} \quad \frac{243}{4} \quad \frac{729}{8} \quad \times\left(\frac{3}{2}\right)$$

1.	$\frac{1}{2}$	$\frac{3}{2}$	$\frac{9}{2}$	$\frac{27}{2}$	$\frac{81}{2}$	$\frac{243}{2}$	$\frac{729}{2}$	$\frac{2187}{2}$	$\times 3$
2.	5	10	20	40	80	160	320	640	$\times 2$
3.	$\frac{3125}{2}$	1250	1000	800	640	512	$\frac{2048}{5}$	$\frac{8192}{25}$	$\times\left(\frac{4}{5}\right)$
4.	1000	500	250	125	$\frac{125}{2}$	$\frac{125}{4}$	$\frac{125}{8}$	$\frac{125}{16}$	$\div 2$
5.	$\frac{11}{3}$	11	33	99	297	891	2673	8019	$\times 3$
6.	7	14	28	56	112	224	448	896	$\times 2$
7.	8	12	18	27	$\frac{81}{2}$	$\frac{234}{4}$	$\frac{702}{8}$	$\frac{2106}{16}$	$\times\left(\frac{3}{2}\right)$
8.	4374	2916	1944	1296	864	576	384	256	$\times\left(\frac{2}{3}\right)$
9.	$\frac{3}{2}$	3	6	12	24	48	96	192	$\times 2$
10.	7	14	28	56	112	224	448	896	$\times 2$
11.	81	27	9	3	1	$\frac{1}{3}$	$\frac{1}{9}$	$\frac{1}{27}$	$\div 3$
12.	1024	256	64	16	4	1	$\frac{1}{4}$	$\frac{1}{16}$	$\div 4$
13.	$\frac{1}{128}$	$\frac{1}{16}$	$\frac{1}{2}$	4	32	256	2048	16384	$\times 8$
14.	12500	2500	500	100	20	4	$\frac{4}{5}$	$\frac{4}{25}$	$\div 5$
15.	$\frac{2}{81}$	$\frac{2}{9}$	2	18	162	1458	13122	118098	$\times 9$

Answer Sheet

NUMBER PATTERNS

Treasure-hunter Jack has received a secret message in a sequence of numbers. Decoded, it will tell him the location of the world's largest diamond, the Golden Jubilee. The message is encoded in a "letter number" cipher. This is when letters are replaced as numbers. However only the MISSING NUMBERS will reveal the true location. Find out what these numbers are!

(Hint: The numbers follow a pattern. You will have to subtract, divide, add or multiply by a whole number or fraction to find the missing numbers.)

Example:

(+5) 5 10 15 20 **25** Then the letter is Y

A	B	C	D	E	F	G	H	I	J	K	L	M
1	2	3	4	5	6	7	8	9	10	11	12	13
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
14	15	16	17	18	19	20	21	22	23	24	25	26

1. 5 10 **20** 40 80

2. 29 22 15 **8** **1**

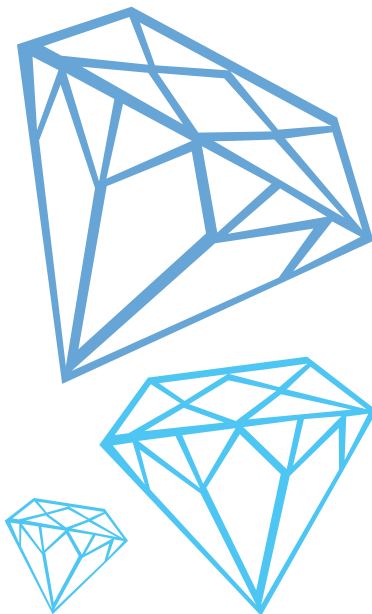
3. $\frac{27}{2}$ **9** 6 4 $\frac{8}{3}$

4. -60 -36 -12 **12** 36

5. 81 27 9 3 **1**

6. 3024 504 84 **14** $\frac{7}{3}$

7. 20 16 12 8 **4**



Where is the location of the Golden Jubilee Diamond?

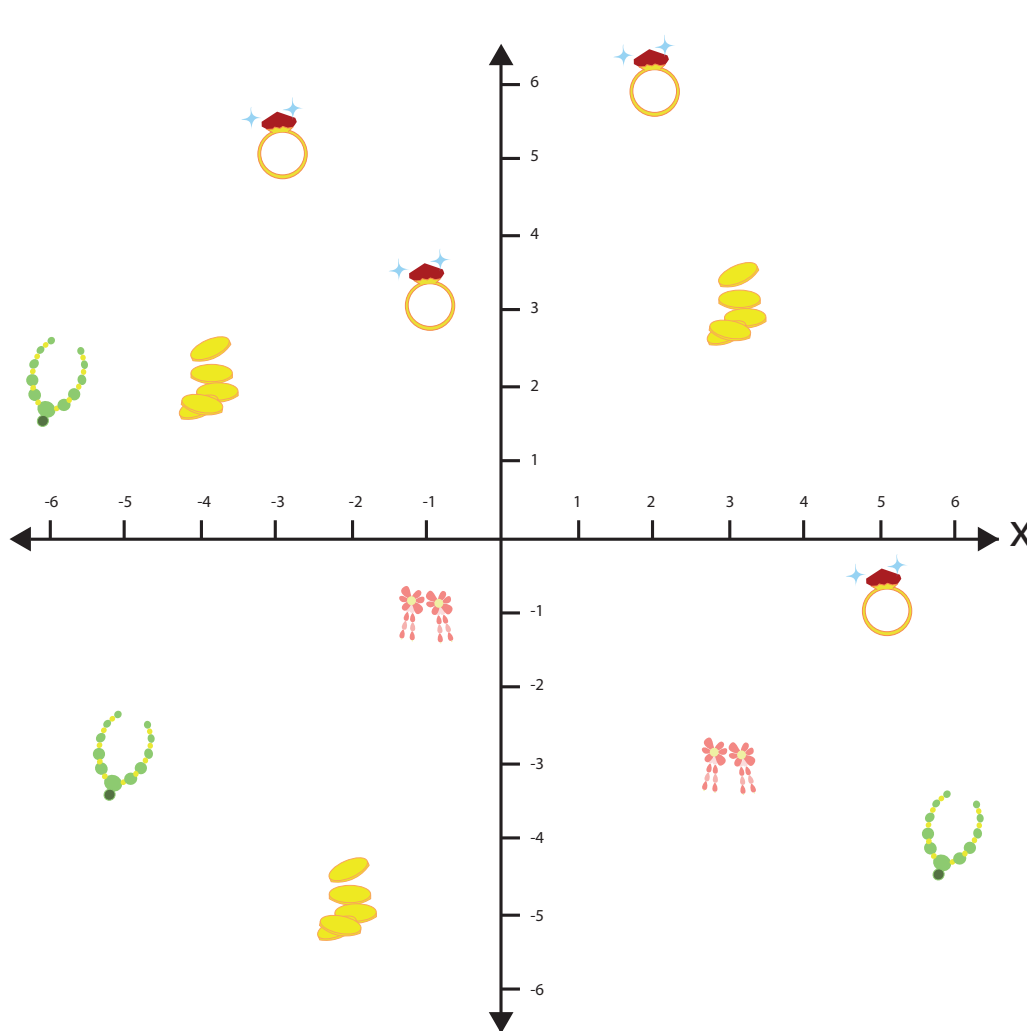
T **H** **A** **I** **L** **A** **N** **D**
— — — — — — — —
1 2a 2b 3 4 5 6 7


Answer Sheet

Math
Algebra

Coordinates Treasure Hunt!

Help the treasure hunter by looking at the coordinate plane below and answering the questions.



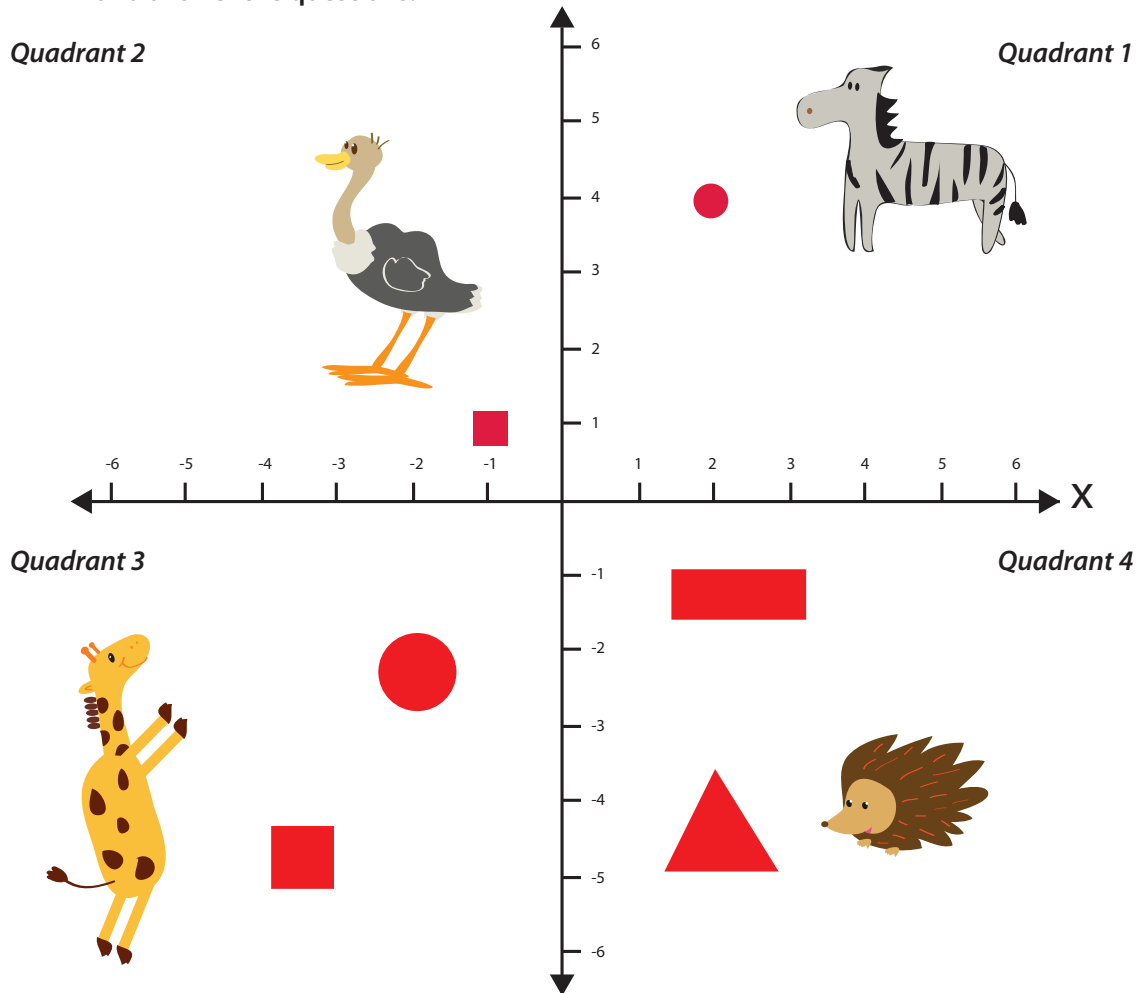
1. What treasure is located at (5, -1)? **RING**
2. What treasure is located at (-2, -5)? **COINS**
3. What treasure is located at (6, -4)? **NECKLACE**
4. Write the coordinates of the earrings below.  **(3, -3) , (-1, -1)**
5. Which quadrant has the most treasure in it? **QUADRANT 2**

Answer Sheet

Math
Algebra

Name the Quadrant

The coordinate plane is divided into four quadrants. Look at the coordinate plane below and answer the questions.



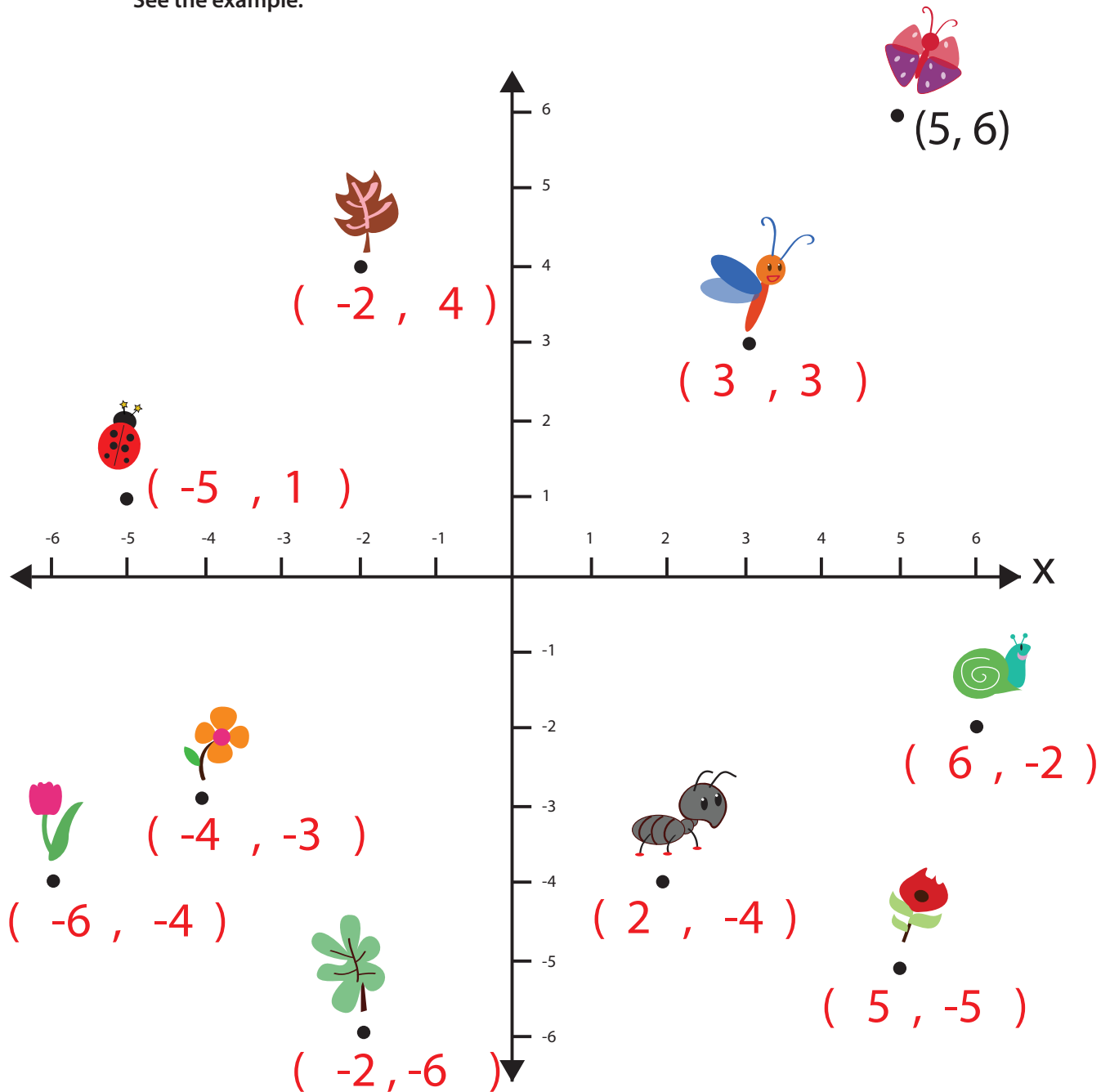
1. Which quadrant is the giraffe in? **QUADRANT 3**
2. Which quadrant is the zebra in? **QUADRANT 1**
3. Which quadrant is the ostrich in? **QUADRANT 2**
4. Draw a triangle and a rectangle in quadrant four.
5. Draw a circle and a square in quadrant three.
6. The coordinates of the square in quadrant 2 are $(-1, 1)$.
What are the coordinates of the circle in quadrant one? **$(2, 4)$**

Answer Sheet

Math
Algebra

Write the Coordinates

Look at the position of each object below, and write the coordinates in the parentheses.
See the example.



Which quadrant does not contain an insect?

QUADRANT 3

Answer Sheet

Math
Algebra

Expression vs. Equation

An expression in math is a sentence containing numbers and the operations. Below are examples of expressions:

$2 + 3$

$17 - 16 + 2$

$\frac{2}{5} \times \frac{6}{6}$

6

$(3 \times 5) - (6 \times 2)$

$y - 20$

An equation is the statement of numbers, expressions, operations that are equal.

Examples:

$2 + 3 = 4 + 1$

$17 - 16 + 2 = 3$

$\frac{2}{5} \times \frac{6}{6} = \frac{12}{30}$

$6 = 6$

$(3 \times 5) - (6 \times 2) = 15 - 12$

$y - 20 = 10 + x$

Look at the statements below. Write "ex" if the statement is an expression.
Write "eq" if the statement is an equation.

ex $7 + f$

ex $6x - 6y - 6z$

ex $12(7 - 3)$

eq $\frac{(40 - 5)}{7} = 5$

eq $(6 \times 4) = (3 \times 8)$

ex 8

ex $(5 \times 5 \times 5)$

eq $0.1 + 0.5 = 0.3 + 0.3$

eq $\frac{9}{2} \times \frac{4}{3} = 6$

ex $(2 \times 2) - (1 \times 1)$

Challenge

Complete the equation by writing the expression on the other side of equation. See the example.

$60 + 4 = \underline{8 \times 8}$

$25 - 15 = \underline{2 \times 5}$

$4 \times 2 = \underline{4 + 4}$

$\frac{12}{4} = \underline{1 + 2}$

Answer Sheet

Math
Algebra

Writing Expressions With Variables #1

An expression in math is a sentence containing numbers and the operations. Below are examples of expressions:

$$2 + 3$$

$$17 - 16 + 2$$

$$\frac{2}{5} \times \frac{6}{6}$$

$$6$$

$$(3 \times 5) - (6 \times 2)$$

$$y - 20$$

A variable represents the unknown number in the expression or equation. For example, $4 \times t = 12$. The letter "t" represents the number which multiplies by 4 to equal 12.

Read the sentences below and write an expression. See the example.

Robin has 10 chocolates and Martin has m chocolates. Write an expression of chocolates that Martin and Robin have together.

Robin has 10
Martin has m



The expression is $10 + m$

Bobby grows 20 carrots and Tommy grows k carrots. Write the expression of carrots that both Bobby and Tommy have.



Bobby has 20
Tommy has k

The expression is $20 + k$

Julie has 7 jelly beans. She gave y jelly beans to Susie. Write the expression of jelly beans that she has left.



Julie has 7
Susie has y

The expression is $7 - y$

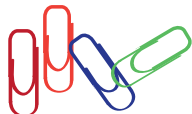
Sally ate 2 pieces of cake in the morning and n pieces in the evening. Write the expression for the amount of cake she had today.



Sally ate 2 in the morning
Sally ate n in the evening

The expression is $2 + n$

Ronny had 12 paper clips. He lost p of them. Write the expression of paper clips Ronny has left.



Ronny has 12
Ronny lost p

The expression is $12 - p$

Answer Sheet

!"#\$
%&'()*+,-

Writing Expressions With Variables #2

An expression in math is a sentence containing numbers and the operations. Below are examples of expressions:

$2 + 3$

$17 - 16 + 2$

$\frac{2}{5}x$

6

$(3x) - (6x + 2)$

$y - 20$

A variable is a letter (x , y , t , etc.) that represents the unknown number in an expression or equation. When a variable is next to a number, it means multiply. For example: $4t = 12$ means 4 multiplied by t equals 12.

Read the sentences below and write an expression. See the example.

There are y letters in the bag. They are divided into 4 equal groups. Write an expression of the letters after dividing.

Number of letters is y
Divided into 4

The expression of division is $\frac{y}{4}$



There are 20 people in the room. They are divided into m equal groups. Write the division expression of the number of people in each group.



$$\frac{20}{m}$$

Ashley has 25 flowers. The number of flowers Sam has is z times more than what Ashley has. Write a multiplication expression of flowers that Sam has.



$$25xz$$

A piece of wood is 20 feet long. It was cut into k equal pieces to make a track. Write a division expression of the length of each piece of wood.



$$\frac{20}{k}$$

Mary has p handbags. Lynn has 2 times more than Mary. Write the multiplication expression of the handbags that Lynn has.



$$p \times 2$$

Answer Sheet

Algebraic Expressions

(answer sheet)

Simplify the following expressions.

1.) $5a + 6a = 11a$

2.) $3a + a = 4a$

3.) $8a - 3a = 5a$

4.) $10a - 2a = 8a$

5.) $9a + 4a = 13a$

6.) $11a - 7a = 4a$

7.) $4b + 3b = 7b$

8.) $12b - 6b = 6b$

9.) $5b + 9b = 14b$

Complete the following expressions.

1.) $12 \times 3 - 5 + 4 = 35$
 $36 - 5 + 4$
 $31 + 4$

2.) $4 + 7 \times 2 - 8 = 10$
 $4 + 14 - 8$
 $18 - 8$

3.) $5 - 7 + 2 \times 10 = 18$
 $5 - 7 + 20$
 $20 - 2$

4.) $15 \div 3 + 8 \times 5 = 45$
 $5 + 8 \times 5$
 $5 + 40$

5.) $11 \times 3 - 12 \div 4 = 30$
 $33 - 12 \div 4$
 $33 - 3$

6.) $5 + 9 - 16 \div 2 = 6$
 $5 + 9 - 8$
 $14 - 8$

Combine like terms to simplify the following expressions.

1.) $3a(a + 4) - 2a + 7 = 3a^2 + 10a + 7$
 $3a^2 + 12a - 2a + 7$

2.) $5a + 3a - 15 \div 3 = 8a - 5$
 $5a + 3a - 5$

3.) $4(3 + 9) + 10a - 4a = 48 + 6a$
 $4(12) + 10a - 4a$
 $48 + 10a - 4a$

4.) $(21 \div 7)(4a + a) - 12 = 15a - 12$
 $3(4a + a) - 12$
 $3(5a) - 12$

5.) $17 + 4(3 + a) - a = 29 + 3a$
 $17 + 12 + 4a - a$
 $29 + 4a - a$

6.) $10a - 4a + 27 \div 3 = 6a + 9$
 $10a - 4a + 9$

Answer Sheet

Math
Algebra

Algebra Action! ANSWER SHEET Value of The Expression

A variable represents the unknown number in the expression or equation.
For example, $4 \times t = 12$. The letter "t" represents the number which multiplies by 4 to equal 12.

An expression in math is a sentence containing numbers and the operations. Below are examples of expressions:

$$2 + 3$$

$$17 - 16 + 2$$

$$\frac{2}{5}x$$

$$6$$

$$(3 \times 5) - (6 \times 2)$$

$$y - 20$$

We can find the value of the expression $7 + y$ by placing the variable with the number.
For example: if $y = 5$

1. Put 5 in the place of y

$$7 + y$$
$$7 + 5$$

2. Calculate it

$$7 + 5 = 12$$

Find the value of the expressions below. Show your work.

$$17 - h$$

If $h = 4$

$$17 - h$$
$$17 - 4 = 13$$

$$4 + y + 7$$

If $y = 8$

$$4 + y + 7$$
$$4 + 8 + 7 = 19$$

$$(12 - b) + 5$$

If $b = 3$

$$(12 - b) + 5$$
$$(12 - 3) + 5 = 14$$

$$(5 \times m) + 1$$

If $m = 6$

$$(5 \times m) + 1$$
$$(5 \times 6) + 1 = 31$$

$$(4 \times p) \times 2$$

If $p = 10$

$$(4 \times p) \times 2$$
$$(4 \times 10) \times 2 = 80$$

$$20 + (6 \times w)$$

If $w = 3$

$$20 + (6 \times w)$$
$$20 + (6 \times 3) = 38$$

Answer Sheet

ANSWER SHEET

Ladybug Math

$9x = 81$
 $x = \frac{81}{9} = 9$

$99 - x = 66$
 $99 - 66 = x$
 $x = 33$

$8 + \frac{18}{x} = 14$
 $\frac{18}{x} = 14 - 8 = 6$
 $x = \frac{18}{6} = 3$

$x - 49 = 29$
 $x = 29 + 49 = 78$

Note: More worksheets at www.education.com/worksheets

Instructions:

Complete each math problem and color the page!

Answer Sheet

ANSWER SHEET

Air Balloon Math

$$65/x = 15$$

$$X = 65/15 = 4.33$$

$$9x = 9$$

$$X = 9/9 = 1$$

$$59 + x = 104$$

$$X = 104 - 59 = 45$$

$$2x = 8$$

$$X = 8/2 = 4$$

$$3x = 6$$

$$X = 6/3 = 2$$

$$4 = x/7 - 6$$

$$4 + 6 = \frac{x}{7}$$

$$\frac{x}{7} = 10$$

$$X = 10 \times 7 = 70$$

Note: More worksheets at www.education.com/worksheets

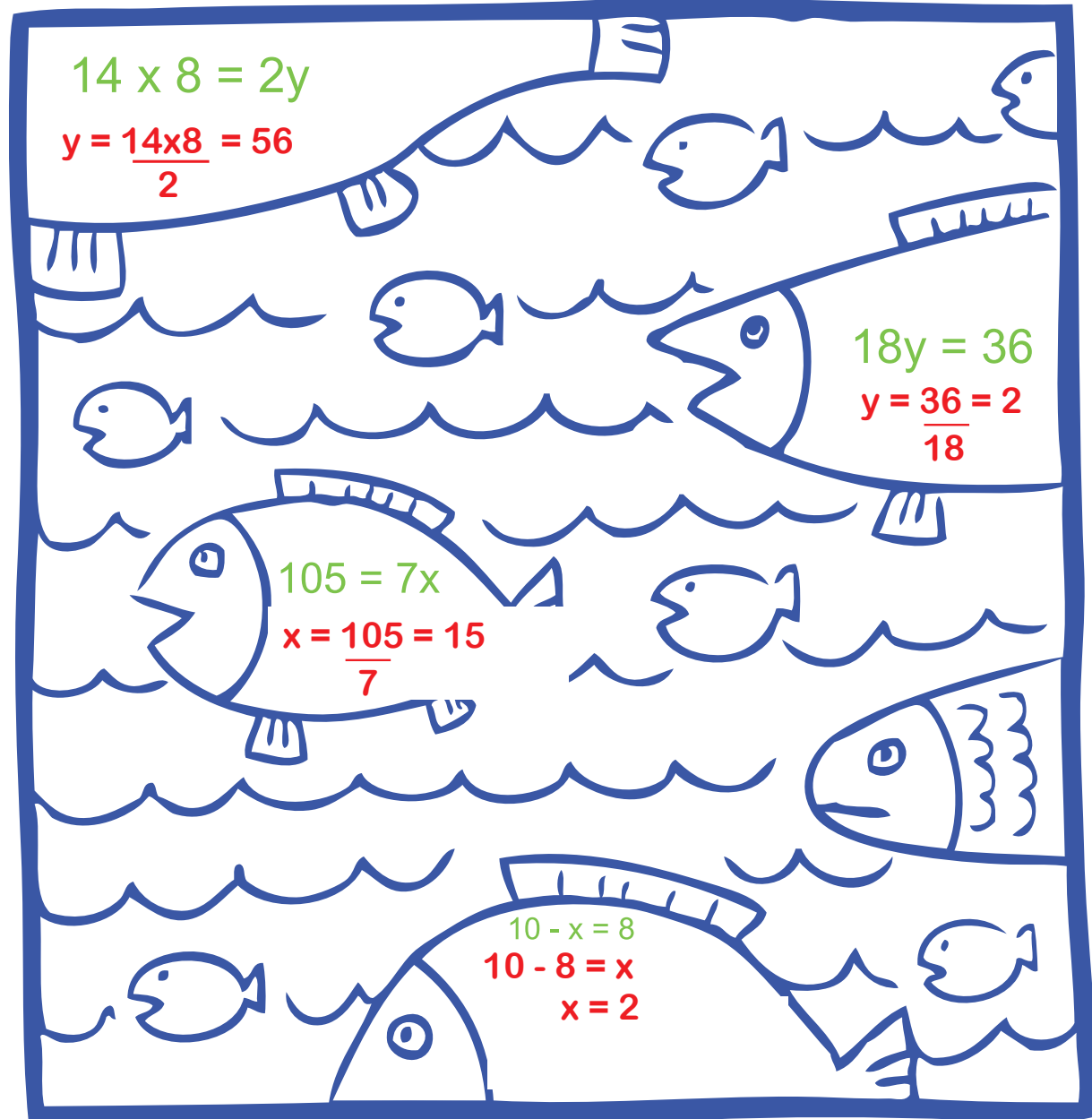
Instructions:

Complete each math problem and color the page!

Answer Sheet

ANSWER SHEET

Fish Math



Note: More worksheets at www.education.com/worksheets

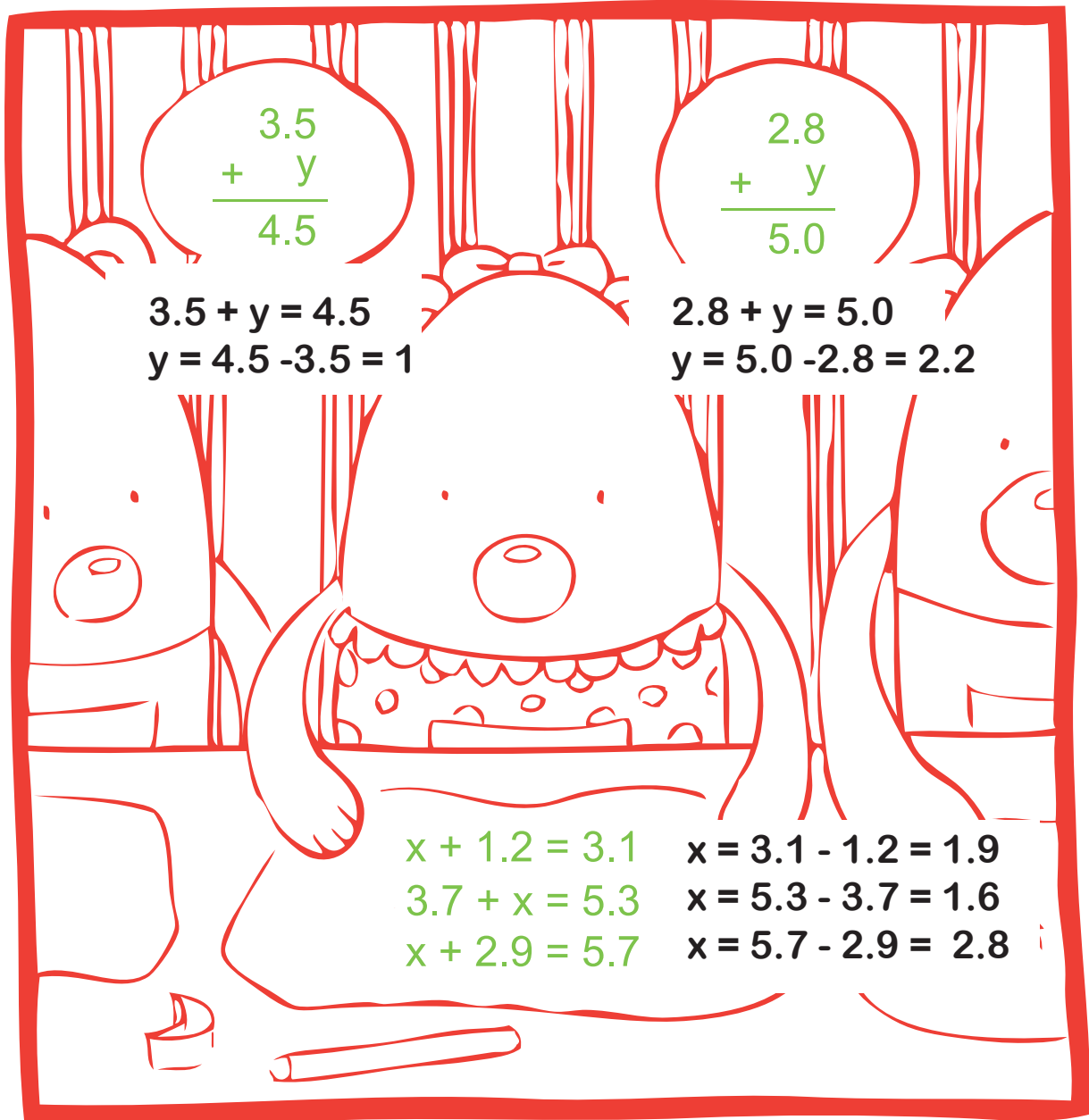
Instructions:

Complete each math problem and color the page!

Answer Sheet

Bear Math

ANSWER SHEET



Note: More worksheets at www.education.com/worksheets

Instructions:

Complete each math problem and color the page!

Answer Sheet

ANSWER SHEET

Forest Math

$14 \times 8 = 2y$

$y = \frac{14 \times 8}{2} = 56$

$$\begin{array}{r} 8 \\ \times 4 \\ \hline 32 \end{array}$$

$$\begin{array}{r} 3 \\ \times 6 \\ \hline 18 \end{array}$$

$$\begin{array}{r} 4 \\ \times 7 \\ \hline 28 \end{array}$$

$$\begin{array}{r} 5 \\ \times 7 \\ \hline 35 \end{array}$$

$54 + y = 23 \times 5 \quad y = (23 \times 5) - 54 = 61$

$41 + 19 = 30y \quad \frac{60}{y} = 30$

$y = \frac{60}{30} = 2$

$23 \times 2 = y + 12 \quad y = (23 \times 2) - 12 = 34$

Note: More worksheets at www.education.com/worksheets

Instructions:

Complete each math problem and color the page!

Answer Sheet

ANSWER SHEET

Star Math

3.2
 $\begin{array}{r} \times 2 \\ \hline 6.4 \end{array}$

$y + 33 = 52 \times 3$
 $y + 33 = 156$
 $y = 156 - 33$
 $y = 123$

2.1
 $\begin{array}{r} \times 4 \\ \hline 8.4 \end{array}$

3.2
 $\begin{array}{r} \times 3 \\ \hline 9.6 \end{array}$

8.5
 $\begin{array}{r} \times 5 \\ \hline 42.5 \end{array}$

$21y = 30 + 33$
 $21y = 63$
 $y = \frac{63}{21} = 3$

$y + 34 = 31 \times 4$
 $y = (31 \times 4) - 34 = 90$

5.4
 $\begin{array}{r} \times 2 \\ \hline 10.8 \end{array}$

1.1
 $\begin{array}{r} \times 5 \\ \hline 5.5 \end{array}$

Note: More worksheets at www.education.com/worksheets

Instructions:

Complete each math problem and color the page!