

# Daily Math

## Week 19 (2013-2014)

Mon. January 6, 2014

Tues. January 7, 2014

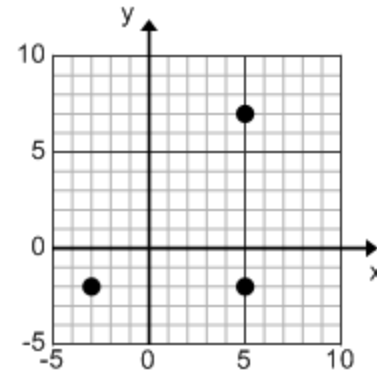
Wed. January 8, 2014

Thurs. January 9, 2014

Fri. January 10, 2014

Monday, January 6, 2014 1<sup>st</sup>

A rectangle has vertices at  $(5, -2)$ ,  $(-3, -2)$ , and  $(5, 7)$ . What are the coordinates of its fourth vertex?

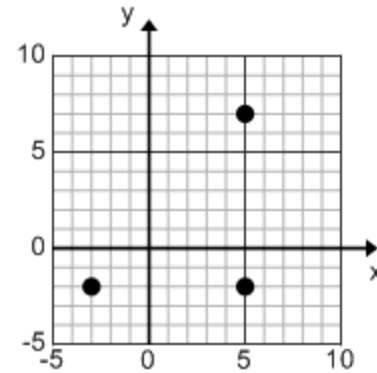


Monday, January 6, 2014

1<sup>st</sup>

A rectangle has vertices at  $(5, -2)$ ,  $(-3, -2)$ , and  $(5, 7)$ . What are the coordinates of its fourth vertex?

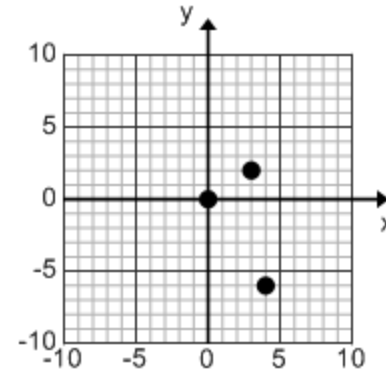
Answer:  **$(-3, 7)$**



Monday, January 6, 2014

2<sup>nd</sup>

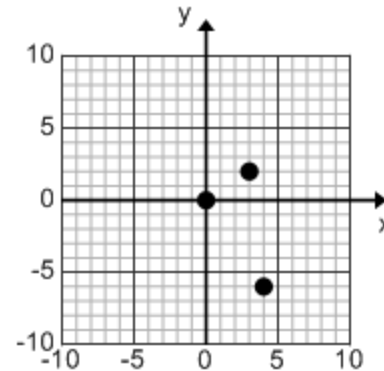
A rectangle has vertices at  $(3, 2)$ ,  $(0, 0)$ , and  $(4, -6)$ . What are the coordinates of its fourth vertex?



Monday, January 6, 2014

2<sup>nd</sup>

A rectangle has vertices at  $(3, 2)$ ,  $(0, 0)$ , and  $(4, -6)$ . What are the coordinates of its fourth vertex?



Answer:  $(4, -6)$  plus

3 to the right and 2 up yields

**$(7, -4)$**

Monday, January 6, 2014

3<sup>rd</sup>

A rectangle has vertices at  $(-4, 2)$ ,  $(3, -3)$ , and  $(3, 2)$ . What are the coordinates of its fourth vertex?

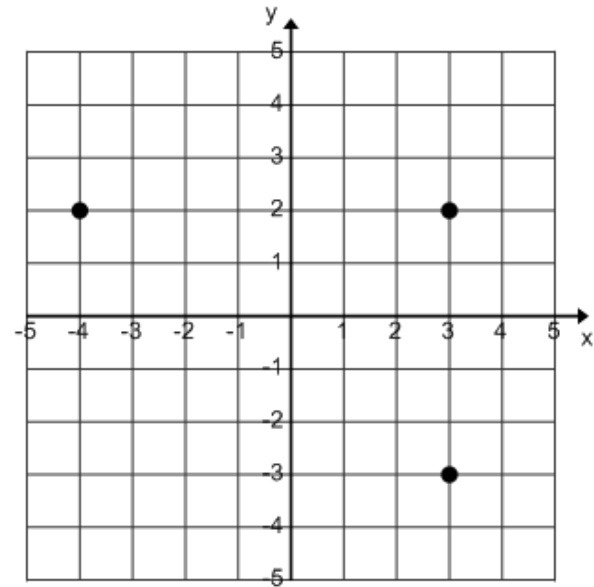
Monday, January 6, 2014

3<sup>rd</sup>

A rectangle has vertices at  $(-4, 2)$ ,  $(3, -3)$ , and  $(3, 2)$ . What are the coordinates of its fourth vertex?

Answer: Sketch a graph:  
Find the missing vertex:

**$(-4, -3)$**



Monday, January 6, 2014

4<sup>th</sup>

A rectangle has vertices at  $(0,0)$ ,  $(-3, 2)$ , and  $(4, 6)$ . What are the coordinates of its fourth vertex?



Monday, January 6, 2014

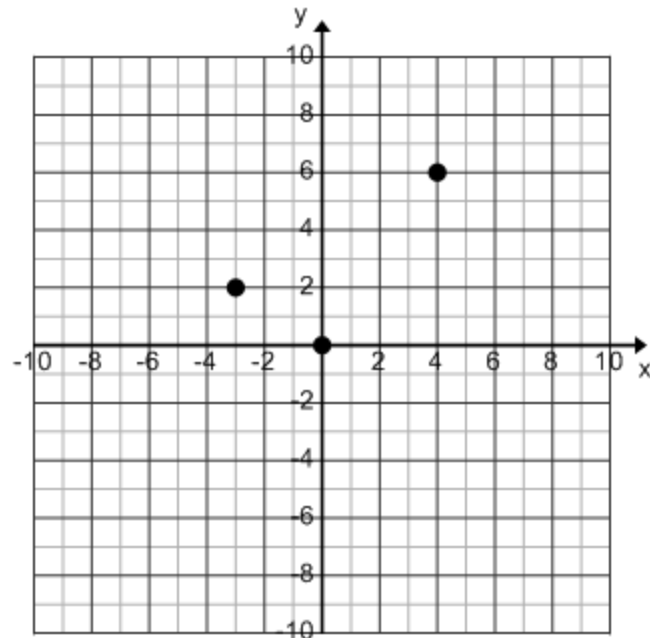
4<sup>th</sup>

A rectangle has vertices at  $(0,0)$ ,  $(-3, 2)$ , and  $(4, 6)$ . What are the coordinates of its fourth vertex?

Answer: Sketch a graph:

Find the missing vertex:

$$(4, 6) + (-3, 2) = \mathbf{(1, 8)}$$



Monday, January 6, 2014

5<sup>th</sup>

Fill in the following table:

x	-2	-1	0	1	50
y	12	9	6	3	

# Monday, January 6, 2014

5<sup>th</sup>

Fill in the following table:

x	-2	-1	0	1	50
y	12	9	6	3	

Answer: Slope =  $\frac{3-6}{1-0} = -3$  and

y-intercept = 6, so that the linear rule is:

$y = -3x + 6$ ; when  $x = 50$ , then

$$y = -3(50) + 6 = -150 + 6 = \mathbf{-144}$$

# Monday, January 6, 2014

6<sup>th</sup>

Fill in the following table:

x	0	4	5	6	7	45
y		5	8	11	14	

# Monday, January 6, 2014

6<sup>th</sup>

Fill in the following table:

x	0	4	5	6	7	45
y	<b>-7</b>	5	8	11	14	<b>128</b>

Answer: Slope is 3 (each additional x adds 3 to the y value). Counting backwards from  $x = 4$ , we need to subtract 3 four times beginning with 5. This yields a y-intercept of  $5 - 12 = -7$ .

The linear rule for this pattern is:  $y = 3x - 7$

So  $y = 3(45) - 7 = 135 - 7 = 128$

# Monday, January 6, 2014

7<sup>th</sup>

Fill in the following table:

x	0	4	5	6	7	72
y		3	5	7	9	

# Monday, January 6, 2014

7<sup>th</sup>

Fill in the following table:

x	0	4	5	6	7	72
y	<b>-5</b>	3	5	7	9	<b>139</b>

Answer: Slope is 2 (each additional x adds 2 to the y value). Counting backwards from  $x = 4$ , we need to subtract 2 four times beginning with 3. This yields a y-intercept of  $3 - 8 = -5$ .

The linear rule for this pattern is:  $y = 2x - 5$

So  $y = 2(72) - 5 = 144 - 5 = 139$

Tuesday, January 7, 2014

1<sup>st</sup>

Fill in the following table:

x	0	6	9	12	15	
y		14	16	18		100



# Tuesday, January 7, 2014

# 1<sup>st</sup>

Fill in the following table:

x	0	6	9	12	15	<b>135</b>
y	<b>10</b>	14	16	18	<b>20</b>	100

Answer: Every increase of  $x$  by 3 yields an increase in  $y$  of 2. Thus for  $x = 15$ , the  $y$  is 2 more than 18, or **20**. Also,  $x = 0$  is two “steps-of-three” below  $x = 6$ , so that the  $y$ -value is two “steps-of-two” below  $y = 14$ , or  $14 - 4 =$  **10**.

The linear rule is:  $y = \frac{2}{3}x + 10$ . When  $y = 100$ , then

$$100 = \frac{2}{3}x + 10$$

$$90 = \frac{2}{3}x$$

$$\frac{3}{2}(90) = \frac{3}{2}\left(\frac{2}{3}x\right) \rightarrow \mathbf{135 = x}$$

Tuesday, January 7, 2014

2<sup>nd</sup>

Fill in the following table:

x	7	12	17	27	47
y	0	2	4		

# Tuesday, January 7, 2014

# 2<sup>nd</sup>

Fill in the following table:

x	7	12	17	27	47
y	0	2	4	8	16

Answer: Every increase of  $x$  by 5 yields an increase in  $y$  of 2. Since there are two “steps-of-five” between  $x = 17$  and  $x = 27$ , then there are two “steps-of-two” between  $y = 4$  and  $y = 8$ .

Similarly, there are four more “steps-of-five” between  $x = 27$  and  $x = 47$ , so that there are four more “steps-of-two” between  $y = 8$  and  $y = 16$

# Tuesday, January 7, 2014

3<sup>rd</sup>

Fill in the following table:

X	10	15	20	
Y	15	20		400

Tuesday, January 7, 2014

3<sup>rd</sup>

Fill in the following table:

x	10	15	20	395
y	15	20	25	400

Answer: The pattern can be expressed as  $x + 5 = y$ . So if  $x = 20$ , then  $y = 25$ .  
If  $y = 400$ , then  $x = 400 - 5 = 395$ .

Tuesday, January 7, 2014

4<sup>th</sup>

Is  $(1, 4)$  on the line  $x + y = 5$ ?

Tuesday, January 7, 2014

4<sup>th</sup>

Is  $(1, 4)$  on the line  $x + y = 5$ ?

Answer: Check the point by substitution:

Does  $1 + 4 = 5$ ? Yes.

**So the point is on the line.**

Tuesday, January 7, 2014

5<sup>th</sup>

Is (4,6) on the line  $x - y = 2$ ?



Tuesday, January 7, 2014

5<sup>th</sup>

Is (4,6) on the line  $x - y = 2$ ?

Answer: Check the point by substitution:

Does  $4 - 6 = 2$ ? No, it is -2.

**So the point is NOT on the line.**

Tuesday, January 7, 2014

6<sup>th</sup>

Is  $(2,8)$  on the line  $2y - 3x = 10$ ?

Tuesday, January 7, 2014

6<sup>th</sup>

Is  $(2, 8)$  on the line  $2y - 3x = 10$ ?

Answer: Check the point by substitution:

Does  $2(8) - 3(2) = 10$ ?

Yes,  $16 - 6 = 10$ .

**So the point is on the line.**

Tuesday, January 7, 2014

7<sup>th</sup>

Is  $(2, 10)$  on the line  $y = 3x + 5$

Tuesday, January 7, 2014

7<sup>th</sup>

Is (2, 10) on the line  $y = 3x + 5$

Answer: Check the point by substitution:

Does  $10 = 3(2) + 5$ ?

No,  $10 \neq 6 + 5$

**So the point is NOT on the line.**

Wednesday, January 8, 2014 1<sup>st</sup>

Solve:

$$8 = -2x + 8 + x - 5$$

Wednesday, January 8, 2014

1<sup>st</sup>

Solve:

$$8 = -2x + 8 + x - 5$$

Answer:  $8 = -2x + 8 + x - 5$

$$8 = -x + 8 - 5$$

$$8 - 3 = -x + 3 - 3$$

$$5 = -x$$

$$-5 = x$$

Wednesday, January 8, 2014 **2nd**

Solve:

$$5x + 3 = 8x + 12$$



Wednesday, January 8, 2014 2nd

Solve:

$$5x + 3 = 8x + 12$$

Answer:  $5x + 3 = 8x + 12$

$$5x - 5x + 3 = 8x - 5x + 12$$

$$3 = 3x + 12$$

$$3 - 12 = 3x + 12 - 12$$

$$-9 = 3x$$

$$-9 \div 3 = 3x \div 3$$

$$-3 = x$$

Wednesday, January 8, 2014 **3rd**

Solve:

$$3(2x - 1) + 4 = 5x + 10$$

# Wednesday, January 8, 2014 3rd

Solve:

$$3(2x - 1) + 4 = 5x + 10$$

Answer:  $3(2x - 1) + 4 = 5x + 10$

$$6x - 3 + 4 = 5x + 10$$

$$6x + 1 = 5x + 10$$

$$6x - 5x + 1 = 5x - 5x + 10$$

$$x + 1 = 10$$

$$x = 9$$

Wednesday, January 8, 2014

4th

Solve:

$$14 - (2q + 5) = 5q + 16$$

Wednesday, January 8, 2014

4th

Solve:

$$14 - (2q + 5) = 5q + 16$$

Answer:  $14 - (2q + 5) = 5q + 16$

$$14 - 2q - 5 = 5q + 16$$

$$9 - 2q + 2q = 5q + 2q + 16$$

$$9 = 7q + 16$$

$$9 - 16 = 7q + 16 - 16$$

$$-7 \div 7 = 7q \div 7$$

$$-1 = q$$

Wednesday, January 8, 2014

5<sup>th</sup>

Solve:

$$-8x + 14 = -2(3x - 7) + 10$$

# Wednesday, January 8, 2014

5<sup>th</sup>

Solve:

$$-8x + 14 = -2(3x - 7) + 10$$

Answer:  $-8x + 14 = -2(3x - 7) + 10$

$$-8x + 14 = -6x + 14 + 10$$

$$-8x + 14 = -6x + 24$$

$$-8x + 8x + 14 = -6x + 8x + 24$$

$$14 = 2x + 24$$

$$14 - 24 = 2x + 24 - 24$$

$$-10 = 2x$$

$$-5 = x$$

Wednesday, January 8, 2014

6<sup>th</sup>

Solve:

$$6 - y = 2(y - 3) + 3$$



# Wednesday, January 8, 2014

# 6<sup>th</sup>

Solve:

$$6 - y = 2(y - 3) + 3$$

Answer:  $6 - y = 2(y - 3) + 3$

$$6 - y = 2y - 6 + 3$$

$$6 - y + y = 2y + y - 3$$

$$6 = 3y - 3$$

$$6 + 3 = 3y - 3 + 3$$

$$9 = 3y$$

$$9 \div 3 = 3y \div 3$$

$$3 = y$$

Wednesday, January 8, 2014

7<sup>th</sup>

Solve:

$$3 - 4(3y - 2) = 6y + 2$$

# Wednesday, January 8, 2014

7<sup>th</sup>

Solve:

$$3 - 4(3y - 2) = 6y + 2$$

Answer:

$$3 - 4(3y - 2) = 6y + 2$$

$$3 - 12y + 8 = 6y + 2$$

$$11 - 12y = 6y + 2$$

$$11 - 12y + 12y = 6y + 12y + 2$$

$$11 = 18y + 2$$

$$11 - 2 = 18y + 2 - 2$$

$$9 = 18y$$

$$9 \div 18 = 18y \div 18$$

$$\frac{1}{2} = y$$

Thursday, January 9, 2014

**1st**

In a month-long canned food drive, Larry's class collected 92 cans in 10 days. Tim's class collected 70 cans in 6 days. Who collected cans faster?

Thursday, January 9, 2014

1st

In a month-long canned food drive, Larry's class collected 92 cans in 10 days. Tim's class collected 70 cans in 6 days. Who collected cans faster?

$$\text{Answer: } \frac{92 \text{ cans}}{10 \text{ days}} = 9.2 \frac{\text{cans}}{\text{day}}$$
$$\frac{70 \text{ cans}}{6 \text{ days}} \approx 11.7 \frac{\text{cans}}{\text{day}}$$

$11.7 > 9.2$ , so **Tim's class collected cans faster.**

Thursday, January 9, 2014

**2nd**

A canary's heart beats 200 times in 12 seconds. How many times does it beat in 45 seconds?

Thursday, January 9, 2014

2nd

A canary's heart beats 200 times in 12 seconds. How many times does it beat in 45 seconds?

Answer:  $\frac{200 \text{ times}}{12 \text{ seconds}} = \frac{x \text{ times}}{45 \text{ seconds}}$   
 $(200)(45) = 12x$   
 $9000 = 12x$   
 $9000 \div 12 = 12x \div 12$   
 **$750 = x$**

Thursday, January 9, 2014

3rd

You travel 66 miles in 1.25 hours.

Moving at the same speed, how far would you travel in a day?



Thursday, January 9, 2014

3rd

You travel 66 miles in 1.25 hours. Moving at the same speed, how far would you travel in a day?

Answer:  $\frac{66 \text{ miles}}{1.25 \text{ hours}} = \frac{x \text{ miles}}{24 \text{ hours}}$

$$(66)(24) = 1.25x$$

$$1584 = 1.25x$$

$$1584 \div 1.25 = 1.25x \div 1.25$$

$$\mathbf{1,267.2 \text{ miles} = x}$$

Thursday, January 9, 2014

4th

A 12 oz. cup of coffee costs \$1.50.

How much would a gallon of that coffee cost? [There are 128 ounces in a gallon.]

Thursday, January 9, 2014

4th

A 12 oz. cup of coffee costs \$1.50. How much would a gallon of that coffee cost? [There are 128 ounces in a gallon.]

Answer:  $\frac{\$1.50}{12 \text{ oz.}} = \frac{\$x}{128 \text{ oz.}}$   
 $(1.5)(128) = 12x$   
 $192 = 12x$   
 $192 \div 12 = 12x \div 12$   
 **$\$17/\text{gallon} = x$**

Thursday, January 9, 2014

5th

If 10 baseball players can eat 55 pancakes, how many players would it take to eat 178 pancakes?

# Thursday, January 9, 2014

# 5th

If 10 baseball players can eat 55 pancakes, how many players would it take to eat 178 pancakes?

Answer:  $\frac{10 \text{ players}}{55 \text{ pancakes}} = \frac{x \text{ players}}{178 \text{ hours}}$   
 $(10)(178) = 55x$   
 $1780 = 55x$   
 $1780 \div 55 = 55x \div 55$   
 $32.4 \text{ players} \approx x$

Since you can't have fractional players, it would take **35 players** to eat 178 pancakes.

Thursday, January 9, 2014

6th

Simplify:

$$1 + 2^2 - (4 + 2 \cdot 1)^2 + 5$$

Thursday, January 9, 2014

6th

Simplify:

$$1 + 2^2 - (4 + 2 \cdot 1)^2 + 5$$

Answer:  $1 + 2^2 - (4 + 2 \cdot 1)^2 + 5$

$$1 + 2^2 - (4 + 2)^2 + 5$$

$$1 + 2^2 - (6)^2 + 5$$

$$1 + 4 - 36 + 5$$

$$1 + 4 - 36 + 5$$

**-26**

Thursday, January 9, 2014

7th

Simplify:

$$7 - 4^2 + (5 - 4 \cdot 3)^2$$



Thursday, January 9, 2014

7th

Simplify:

$$7 - 4^2 + (5 - 4 \cdot 3)^2$$

$$\text{Answer: } 7 - 4^2 + (5 - 4 \cdot 3)^2$$

$$7 - 4^2 + (5 - 12)^2$$

$$7 - 4^2 + (-7)^2$$

$$7 - 16 + 49$$

**40**

Friday, January 10, 2014

**1st**

Evaluate:

$$x^2y^3z \text{ if } x = 3, y = -2, z = 4$$

Friday, January 10, 2014

1st

Evaluate:  $x^2y^3z$

if  $x = 3, y = -2, z = 4$

Answer:  $x^2y^3z$   
 $3^2(-2)^3(4)$   
 $9 \cdot (-8) \cdot 4$   
**-288**

Friday, January 10, 2014

**2nd**

Simplify:

$$4x - 7x + 3$$

Friday, January 10, 2014

2nd

Simplify:

$$4x - 7x + 3$$

Answer:  $-3x + 3$

Friday, January 10, 2014

**3rd**

Simplify:

$$-\sqrt{4} + 5$$

Friday, January 10, 2014

3rd

Simplify:

$$-\sqrt{4} + 5$$

Answer:  $-\sqrt{4} + 5$

$$-2 + 5$$

**3**

Friday, January 10, 2014

**4th**

Simplify:

$$\sqrt{36}(\sqrt{4})$$



Friday, January 10, 2014

4th

Simplify:

$$\sqrt{36}(\sqrt{4})$$

Answer:  $\sqrt{36}(\sqrt{4})$   
 $9(2)$

**18**

Friday, January 10, 2014

**5th**

If  $x = 4$ ,  $y = 3$ , and  $z = 1$ ,

then  $y(\sqrt{x} + z) =$

Friday, January 10, 2014

5th

If  $x = 4$ ,  $y = 3$ , and  $z = 1$ ,  
then  $y(\sqrt{x} + z) =$

Answer:  $y(\sqrt{x} + z)$   
 $3(\sqrt{4} + 1)$   
 $3(2 + 1)$   
 $3(3)$

**9**

Friday, January 10, 2014

6th

Simplify:

$$(x^2)^3$$

Friday, January 10, 2014

6th

Simplify:

$$(x^2)^3$$

Answer:

$$(x^2)^3$$
$$x^2 x^2 x^2$$
$$x^6$$

Friday, January 10, 2014

7th

Simplify:

$$x^2 \cdot \frac{x}{y}$$

Friday, January 10, 2014

7th

Simplify:

$$x^2 \cdot \frac{x}{y}$$

Answer:  $\frac{x^3}{y}$