

Daily Math

Week 33 (2013-2014)

Mon. April 21, 2014

Tues. April 22, 2014

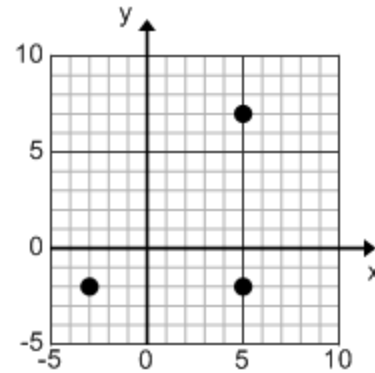
Wed. April 23, 2014

Thurs. April 24, 2014

Fri. April 25, 2014

Monday, April 21, 2014 1st

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

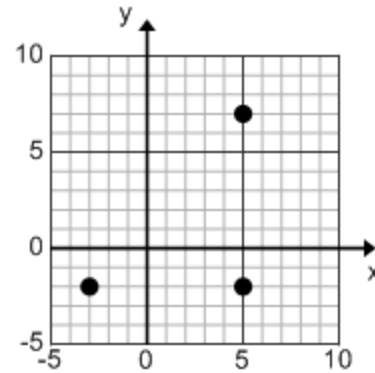


Monday, April 21, 2014

1st

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

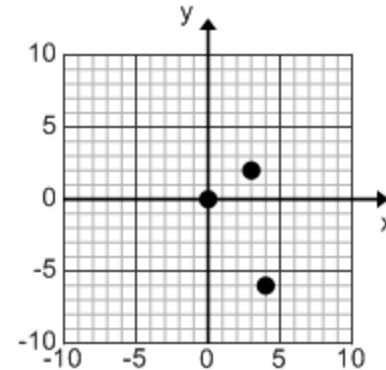
Answer: **$(-3, 7)$**



Monday, April 21, 2014

2nd

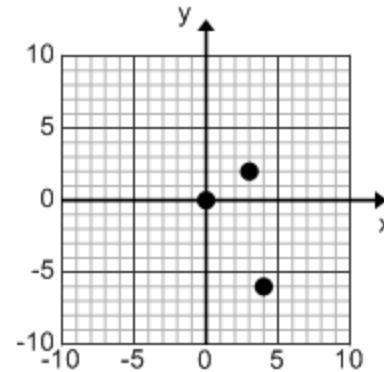
A rectangle has vertices at $(3, 2)$, $(0, 0)$, and $(4, -6)$. What are the coordinates of its fourth vertex?



Monday, April 21, 2014

2nd

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, April 21, 2014

3rd

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

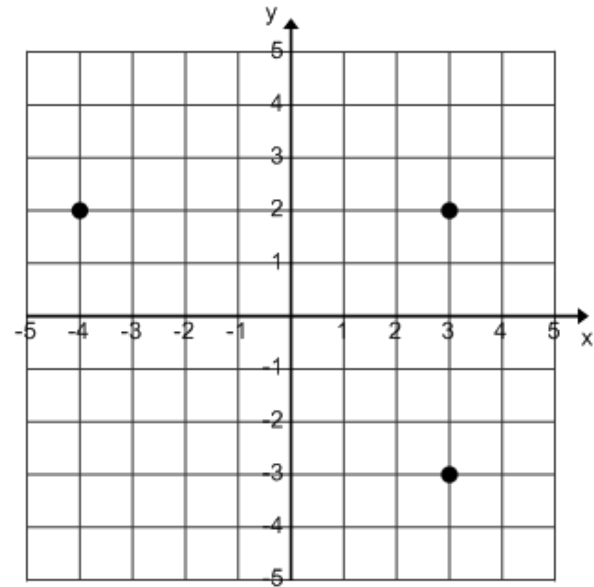
Monday, April 21, 2014

3rd

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, April 21, 2014

4th

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

Monday, April 21, 2014

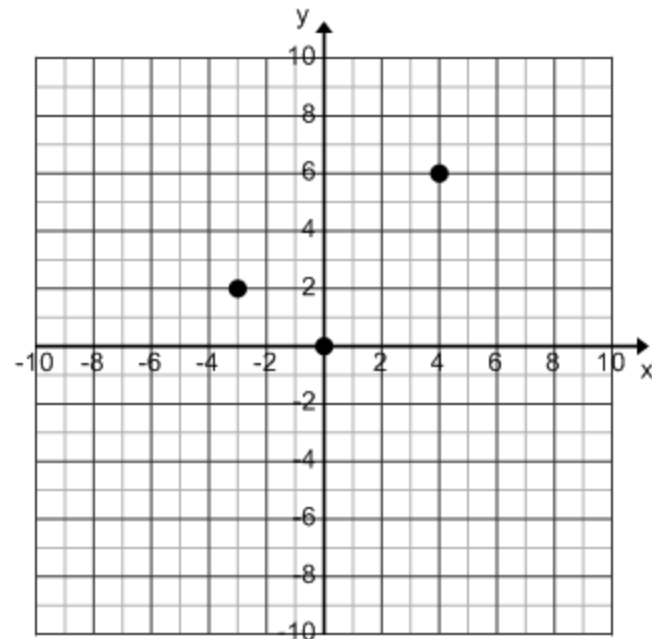
4th

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, April 21, 2014

5th

Fill in the following table:

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

Monday, April 21, 2014

5th

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, April 21, 2014

6th

Fill in the following table:

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

Monday, April 21, 2014

6th

Fill in the following table:

x	0	4	5	6	7	45
y	-7	5	8	11	14	128

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 $y = 3(45) - 7 = 135 - 7 = \mathbf{128}$

Monday, April 21, 2014

7th

Fill in the following table:

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

Monday, April 21, 2014

7th

Fill in the following table:

x	0	4	5	6	7	72
y	-5	3	5	7	9	139

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 $y = 2(72) - 5 = 144 - 5 = \mathbf{139}$

Tuesday, April 22, 2014

1st

Fill in the following table:

x	0	6	9	12	15	
y		14	16	18		100

Tuesday, April 22, 2014

1st

Fill in the following table:

x	0	6	9	12	15	45
y	10	14	16	18	20	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: $y = 2x + 10$. When $y = 100$, then
 $100 = 2x + 10$

$90 = 2x$ and thus $x =$ **45**

Tuesday, April 22, 2014

2nd

Fill in the following table:

x	7	12	17	27	47
y	0	2	4		

Tuesday, April 22, 2014

2nd

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, April 22, 2014

3rd

Fill in the following table:

X	10	15	20	
Y	15	20		400

Tuesday, April 22, 2014

3rd

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 $y = \mathbf{25}$.
If $y = 400$, then $x = 400 - 5 = \mathbf{395}$.

Tuesday, April 22, 2014

4th

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

Tuesday, April 22, 2014

4th

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, April 22, 2014

5th

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

Tuesday, April 22, 2014

5th

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, April 22, 2014

6th

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

Tuesday, April 22, 2014

6th

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, April 22, 2014

7th

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

Tuesday, April 22, 2014

7th

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, April 23, 2014 **1st**

Solve:

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

Wednesday, April 23, 2014

1st

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, April 23, 2014

2nd

Solve:

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

Wednesday, April 23, 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, April 23, 2014

3rd

Solve:

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

Wednesday, April 23, 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, April 23, 2014

4th

Solve:

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

Wednesday, April 23, 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, April 23, 2014

5th

Solve:

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

Wednesday, April 23, 2014

5th

Solve:

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

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

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

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

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

$$14 = 2x + 24$$

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

$$-10 = 2x$$

$$\mathbf{-5 = x}$$

Wednesday, April 23, 2014

6th

Solve:

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

Wednesday, April 23, 2014

6th

Solve:

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

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

$$6 - y = 2y - 4$$

$$6 - y + y = 2y + y - 4$$

$$6 = 3y - 4$$

$$6 + 4 = 3y - 4 + 4$$

$$10 = 3y$$

$$10 \div 3 = 3y \div 3$$

$$\frac{10}{3} = y$$

Wednesday, April 23, 2014

7th

Solve:

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

Wednesday, April 23, 2014

7th

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, April 24, 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, April 24, 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, April 24, 2014

2nd

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

Thursday, April 24, 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, April 24, 2014

3rd

You travel 66 miles in 1.25 hours.

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

Thursday, April 24, 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, April 24, 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, April 24, 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, April 24, 2014

5th

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

Thursday, April 24, 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, April 24, 2014

6th

Simplify:

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

Thursday, April 24, 2014

6th

Simplify:

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

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

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

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

$$1 + 4 - 36 + 5$$

$$1 + 4 - 36 + 5$$

$$\mathbf{-26}$$

Thursday, April 24, 2014

7th

Simplify:

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

Thursday, April 24, 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, April 25, 2014

1st

Evaluate: x^2y^3z if $x = 3$, $y = -2$, $z = 4$

Friday, April 25, 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, April 25, 2014

2nd

Simplify:

$$4x - 7x + 3$$

Friday, April 25, 2014

2nd

Simplify:

$$4x - 7x + 3$$

Answer: $-3x + 3$

Friday, April 25, 2014

3rd

Simplify:

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

Friday, April 25, 2014

3rd

Simplify:

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

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

$$-2 + 5$$

3

Friday, April 25, 2014

4th

Simplify:

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

Friday, April 25, 2014

4th

Simplify:

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

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

18

Friday, April 25, 2014

5th

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

Friday, April 25, 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, April 25, 2014

6th

Simplify:

$$(x^2)^3$$

Friday, April 25, 2014

6th

Simplify:

$$(x^2)^3$$

Answer:

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

Friday, April 25, 2014

7th

Simplify:

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

Friday, April 25, 2014

7th

Simplify:

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

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