7th Grade Math Study Guide

1.) Match each scenario with the correct solution:

a. It was -5°, then the temperature dropped 4°	___ -13
b. Mike is 6 feet below sea level, then dives 8 feet deeper	___ - 22
c. The temperature was -7°, then it increase by 10°	___ -9
d. The quarterback gained 4 yards, then lost 7 yards	___ 3
e. Maria owes her mom $5, then borrows 8 more dollars	___ 7
f. Ben deposits $34, then withdraws $40	___ -6
g. Kelly's altitude was 78 meters before skiing down 100 meters _	___ -14
h. It was -8°, then the temperature increased by 15°	___ -3

2.) The additive inverse of a number, is the opposite of the number, or the amount you would have to add to a number to make it zero. Find the additive inverse of each number below:

a. -9 _____ b. ¾ _____ c. 81 _____ d. -6.7 _____ e. – ¼ _____

3.) Find the decimal equivalent for each fraction, and then indicate whether the decimal terminates or repeats. If the decimal repeats, place the bar over the appropriate digits:

a. $\frac{7}{8}$ b. $\frac{9}{14}$ c. $\frac{15}{19}$ d. $5\frac{5}{9}$ e. $-7\frac{8}{11}$

4.) Simplify each expression:

a. -4(6m – 5) b. ⅔(12y – 15) c. -8(-¼m + 3) + 3m

_____ _____ _____

5.) Factor each expression by pulling out the greatest common factor:

a. 9m + 15p – 36 b. 18k – 24c - 42m c. -8f – 32v – 40t

_____ _____ _____

6.) Find the value of each expression below:

a. -9 + (-13) = _____ b. -8 – (-6) = _____ c. 14 – 23 = _____

d. 5 – (-6) = _____ e. -10 – 4 = _____ f. -9 + 16 = _____

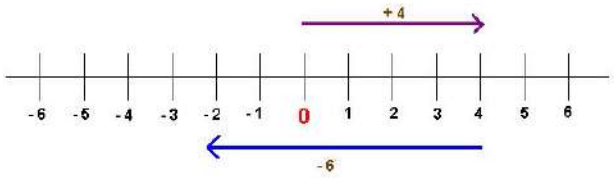
g. -18 ÷ -3 = _____ h. 6 • -8 = _____ i. (-7)(-4) = _____

j. -¾ - ⅖ = _____ k. -⅓ - (-⅗) = _____ l. -⅚ • ⅞ = _____

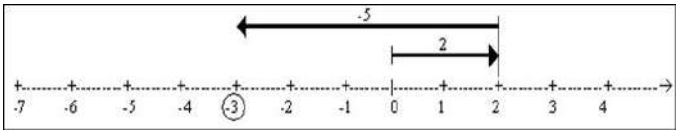
m. ⅞ ÷ ⅖ = _____ n. -⅚ ÷ -⅓ = _____ o. ⅘ - (-⅞) = _____

7.) Write a numeric expression for each number-line:

a.



b.



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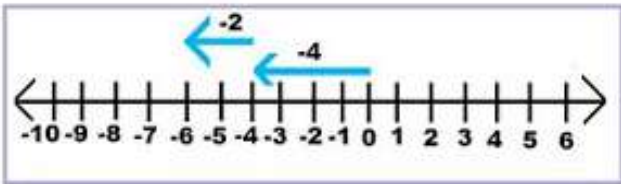

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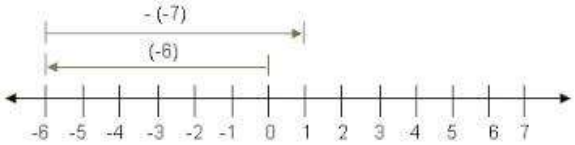
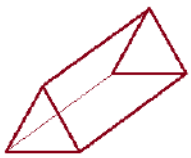
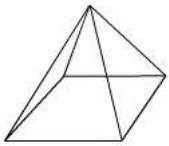
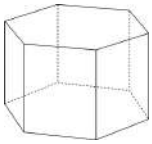


8.) Draw a quick sketch of the cross-section that would form if the geometric figure was sliced perpendicular/vertical to the base and parallel/horizontal to the base:

Figure	Perpendicular/Vertical Cross-Section	Parallel/Horizontal Cross-Section
a. 		
b. 		
c. 		
d. 		
e. 		

9.) Match each expression with an equivalent expression:

a. $15 \div \frac{1}{3}$ _____ $15 \bullet \frac{1}{5}$

b. $\frac{1}{3} \div \frac{1}{5}$ _____ $5 \bullet 3$

c. $15 \div 5$ _____ $\frac{1}{3} \bullet 5$

d. $5 \div \frac{1}{3}$ ____ $15 \bullet 3$

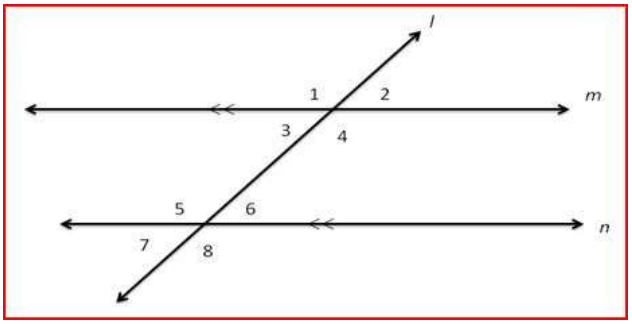
10.) If m + n = p, which of the following must also be true?

a. m – n = p b. m – (-n) = p c. m + (-n) = p d. m • n = p

11.) If t – r = s, which of the following must also me true?

a. r – t = s b. t – (-r) = s c. t + (-r) = s d. s – r = t

12.) Use the image below to name angle pairs:



a. Name two pairs of vertical angles:

b. Name two pairs of supplementary angles:

c. Name two pairs of corresponding angles:

13.) Which of the following types of angles are ALWAYS congruent?

I. Vertical angles **II. Supplementary angles** **III. Complementary angles** **IV. Corresponding angles**

a. I and III b. I and II c. II and III d. I and IV

14.) Which expression represents the circumference and area of a circle with a radius of 7 in?

a. $c = 14\pi$ and $a = 49\pi$ b. $c = 49\pi$ and $a = 7\pi$ c. $c = 7\pi$ and $a = 14\pi$

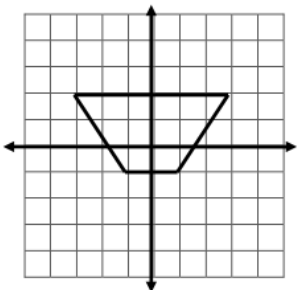
15.) Which expression represents the circumference and area of a circle with a diameter of 10?

a. $c = 5\pi$ and $a = 10\pi$ b. $c = 10\pi$ and $a = 100\pi$ c. $c = 10\pi$ and $a = 25\pi$

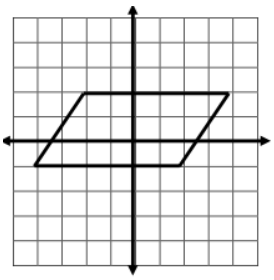
16.) On a number-line, what is the distance between $-6\frac{2}{5}$ and $3\frac{1}{6}$? (show your work)

17.) Find the area of each shape below:

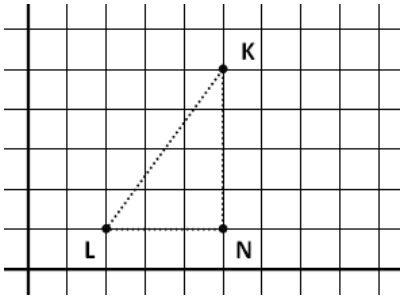
a.



b.

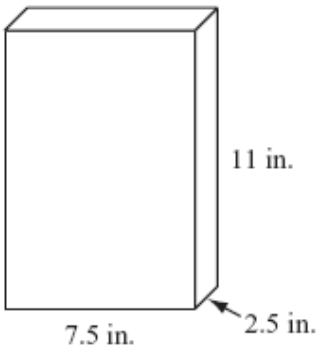


c.

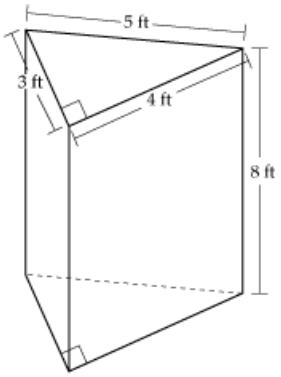


18.) Find the volume and surface area of each geometric figure below:

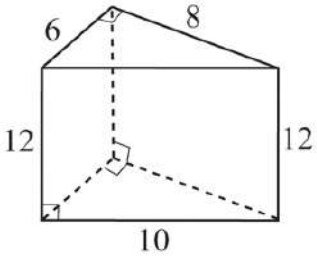
a.



b.



c.



19.) Find the unit rate for each scenario:

a. 8 bags of skittles for $6.32 unit rate: _____

b. 0.25 inches = 10 feet unit rate: _____

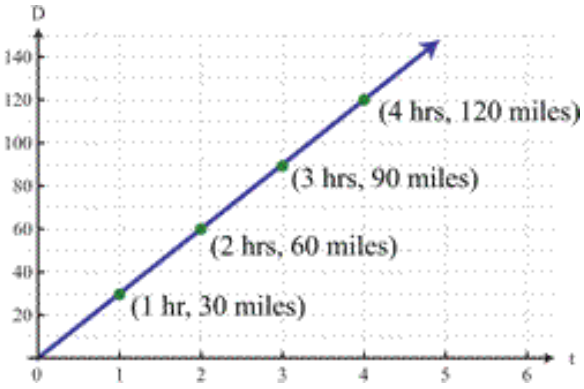
c. 4 laps in 9 minutes unit rate: _____

d. 5 baskets weigh 17.5 lbs unit rate: _____

20.) On a map, 1 inch = 4½ miles. If the distance from one end of the park to the opposite end of the park is 5¾ inches on the map, what is the actual distance?

21.) Coke is creating a smaller version of the 12ounce coke can. If they use a scale factor of 0.75, how many ounces will be in the new can?

22.) Answer the following questions using the graph below:



a. Does the graph represent a direct proportion? Explain using two pieces of evidence.

b. What is the constant of proportionality?

c. At this rate, how far would someone travel in 12¼ hours?

d. At this rate, how long would it take someone to travel 262.5 miles?

23.) Answer the following questions using the table below:

Hours	Money
0	$0
1	$9
2	$18
3	$27
4	$36

a. Does the table represent a direct proportion? Explain using two pieces of evidence.

b. What is the constant of proportionality?

c. At this rate, how much money would someone earn if they worked for 18¾ hours?

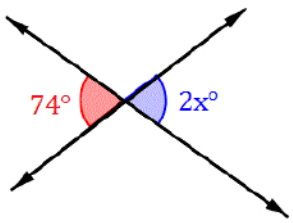
d. At this rate, how long would it take someone to earn $100?

24.) Emma joined a gym, and paid a one-time flat fee of $125. The monthly cost of belonging to the gym is $45. If Emma has paid a total of $350, write and solve an equation to calculate the number of months she has been a member of the gym.

Equation: _____ Solution: _____

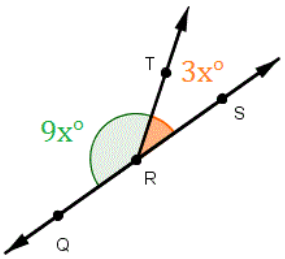
25.) Use your understanding of angle relationships to find the value of "x" in each problem below:

a.



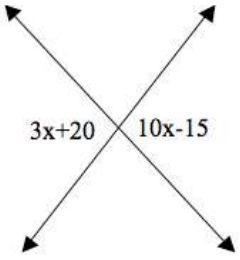
x = _____

b.



x = _____

c.



x = _____

26.) Nathaniel has a bag of 5 green marbles, 3 blue marbles, 6 red marbles, and 6 yellow marbles. Find the probability of each situation:

a. Nathaniel pulls a blue marble, replaces it, and then pulls another blue marble.

b. Nathaniel pulls a blue marble, doesn't replace it, and then pulls another blue marble.

c. Nathaniel pulls a red marble, doesn't replace it, and then pulls a yellow marble.

27.) If Maggie runs ¾ of a mile in 6 minutes, how long will it take her to run 1 mile if she continues at the same pace?

28.) Marcus finished ⅗ of his science homework in 15 minutes, at this rate, how long will it take Marcus to finish his entire assignment?

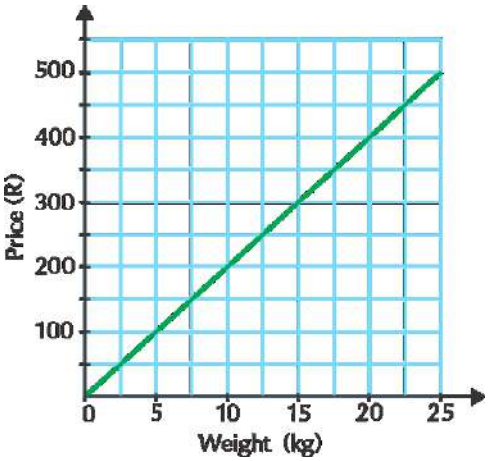
29.) Use the table below to answer the questions:

Temperatures in NY City	
Day	Temperature
1	35
2	50
3	52
4	32
5	59
6	67

a. What was the percent increase in temperature from day 1 to day 2? (Round to the nearest whole number

b. What was the percent decrease in temperature from day 3 to day 4? (Round to the nearest whole number)

30.)Which equation represents the relationship between weight (x) and Price (y) in the graph below?



a. y = 100x

b. y = 20x

c. y = 5x

d. y = 50x

Answer Key

1.) e, g, a, c, h, f, b, d

2.) 9, - ¾ , -81, 6.7, ¼

3.) 0.875, 0.64, 0.79, 5.56, -7.73 (rounded to nearest hundredth)

4.) -24m + 20, 8y – 10, 5m – 24

5.) 3(3m + 5p – 12), 6(3k – 4c – 7m), -8(f + 4v + 5t)

6.) -22, -2, -9, 11, -14, 7, 6, -48, 28, -1 $\frac{3}{20}$, $\frac{4}{15}$, -$\frac{35}{48}$, 2 $\frac{3}{16}$, 2 ½, 1 $\frac{27}{40}$

7.) 4 – 6 = -2, 2 – 5 = -3, -4 -2 = -6, -6 – (-7) = 1

8.) rectangle/circle, rectangle/triangle, triangle/rectangle, rectangle/hexagon, triangle/circle

9.) c, d, b, a

10.) b

11.) c

12.) Vertical: 1 &4 or 2 &3 or 5&8 or 7&6

Supplementary: 1&2 or 1&3 or 3&4 or 4&2 or 5&6 or 5&7 or 7&8 or 8&6 or 5&3 or 6 &4 or 1&7 or 8&2

Corresponding: 1&5 or 2&6 or 3&7 or 4&8

13.) d

14.) a

15.) c

16.) $9\frac{17}{30}$

17.) 12, 18, 6

18.) a. volume: 206.25 in^3, surface area: 257.5 in^2

b. volume: 48ft^3, surface area: 108 ft^2

c. volume 288 u^3, surface area: 336 u^2

19.) a. $0.79/bag b. 40ft/in c. 2.25min/lap d. 3.5 lbs/basket

20.) 25.875 miles

21.) 9ounces

22.) a. yes, it is linear and goes through the origin

b. 30mins/hr

c. 367.5 miles

d. 8.75 hours

23.) a. Yes, constant rate of change, and x and y both equal zero at the same time.

b. $9/hr

c. $168.75

d. 11.1 hours

24.) 350 = 125 + 45m; m = 5

25.) a. x = 37 b. x = 15 c. x = 5

26.) a. 9/400 b. 3/190 c. 9/95

27.) 8 minutes

28.) 25 minutes

29.) a. 43% increase b. 38% decrease

30.) b