Dimensions Math 6B Test

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**Students should score above a 75% on this test and the Dimensions Math 6A test to enter Dimensions Math Level 7A.*

1. Write an algebraic expression for the following statements:
   a. 7 less than *m*

   b. The quotient when 3*x* is divided by 5

   c. The product of 8 and *p* increased by 10

2. Evaluate when a = 3.

   a. $12 - a$

   b. $5a$

   c. a^4

   d. $\frac{a}{3}$

   e. $\frac{3}{10}a + 0.8$

   f. $\frac{5}{6}a$

3. Simplify the expressions:

   a. $4p + 2p$

   b. $12m - m + 5m$

   c. $3y + 7 + 2y - 3$

4. Use the distributive property to simplify the expression

   $4(x + 2)$

5. Determine whether x = 3 is a solution to: $21 - x = 17$

6. Determine whether y = 12 is a solution to: $6 = \frac{3}{4}y$

7. Determine whether m = 16 is a solution to: $4 = \frac{m}{4}$

8. Solve each equation and check your answers:

   a. $y - 57 = 14$

   b. $8x = 104$

c. $112 = \frac{x}{4}$

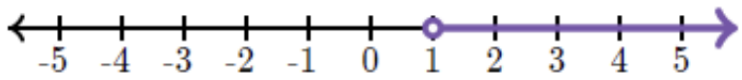
d. $m - \frac{3}{7} = \frac{9}{14}$

e. $x + 8 = 11.4$

9. Determine whether y = 4 is a solution to: $y \geq 5$

10. Determine whether y = -2 is a solution to: $y > -10$

11. Write an inequality for this graph:

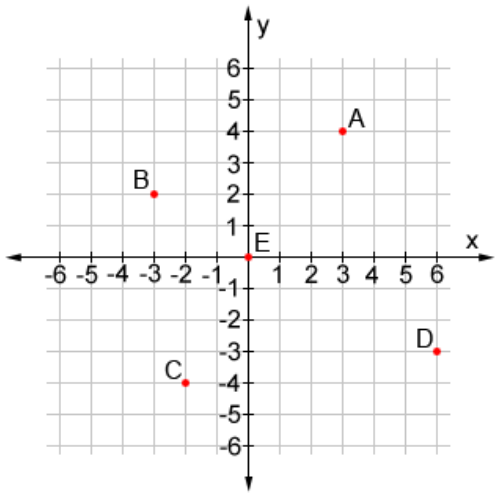


12. Which quadrant is each point located?

a. (-8, 1)

b. (9, 13)

13. State the coordinates of points A, B, C and D using the graph below.



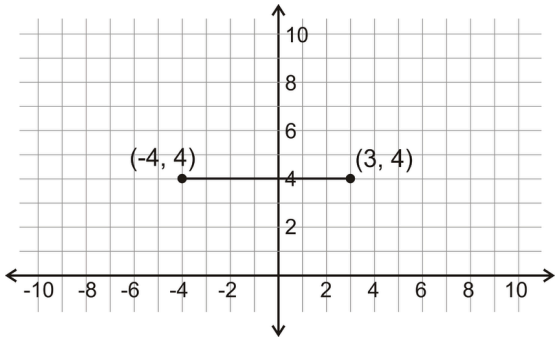
a. A (_____ , _____)

b. B (_____ , _____)

c. C (_____ , _____)

d. D (_____ , _____)

14. What is the distance between the pair of points

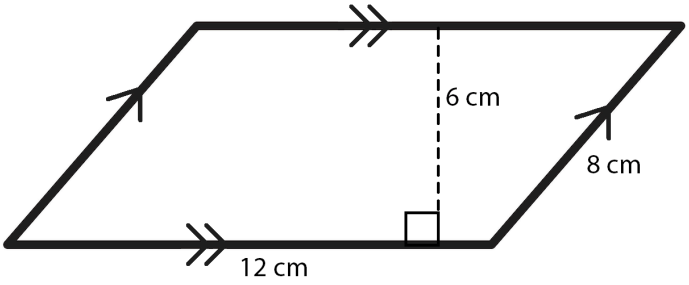


15. Write an equation which could be used to show the relationship between x and y.

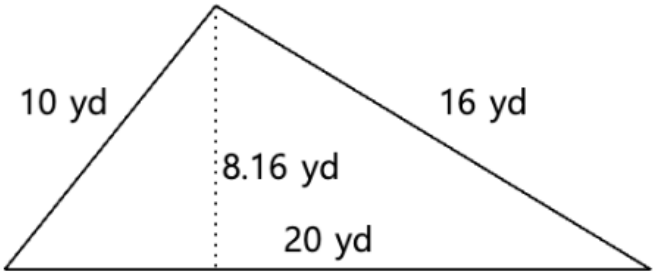
x	y
2	0
3	1
4	2
5	3

16. Find the **area** of each figure:

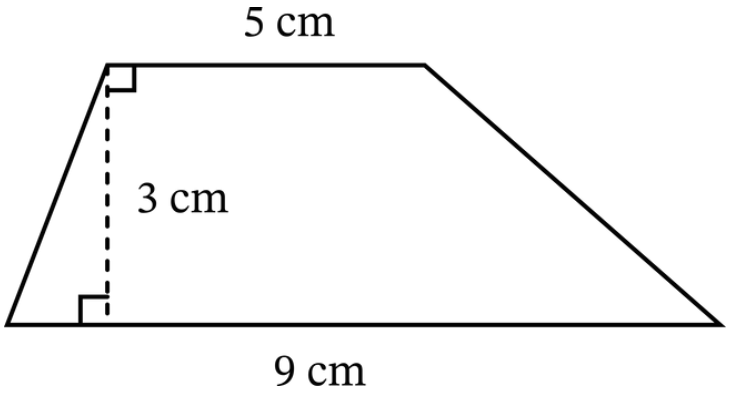
a.



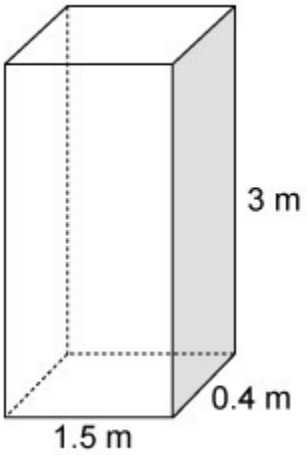
b.



c.



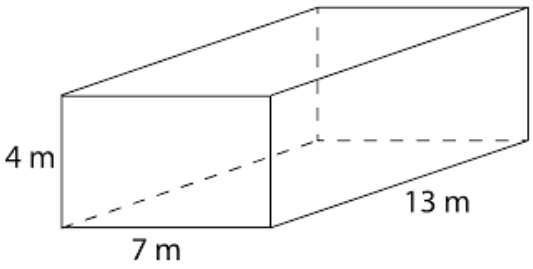
17. Find the **volume** of the figure:



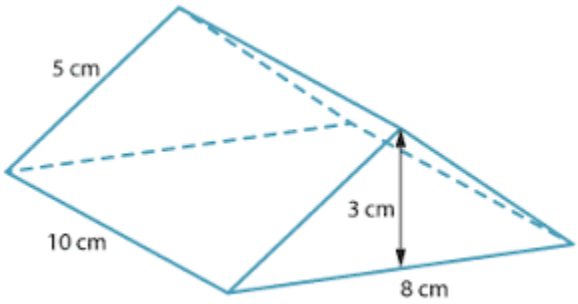
18. A rectangular tank that measures 20 cm x 15 cm x 12 cm, is filled ⅔ of the way. Find the **volume** of the water in liters (1000 cm^3 = 1 liter).

19. Find the **surface area** of the following:

a.



b.



20. Find the mean, median, mode and range of the following data set:

10, 2, 4, 10, 6, 10

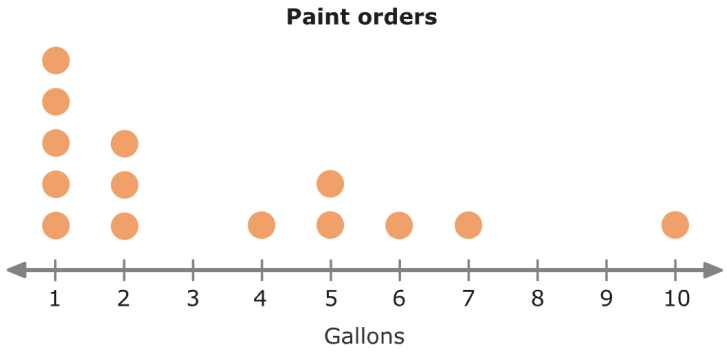
a. Mean = _____

b. Median = _____

c. Mode = _____

d. Range = _____

21. The dot plot shows the number of gallons of paint customers ordered during a shift at a paint store. Answer the questions about the dot plot below.



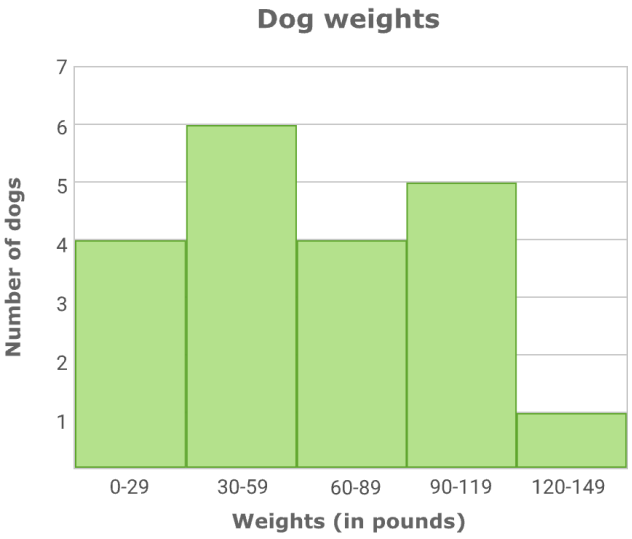
a. Find the mean of the data.

b. Find the mode of the data.

c. Find the median of the data.

d. Find the range of the data.

22. The histogram below shows the weights of dogs seen in a vet office over the last day. Answer the questions about the graph below.



a. How many dogs weighed between 60-89 lbs?

b. Fill in the blank: Most dogs weighed between _____and _____ pounds.

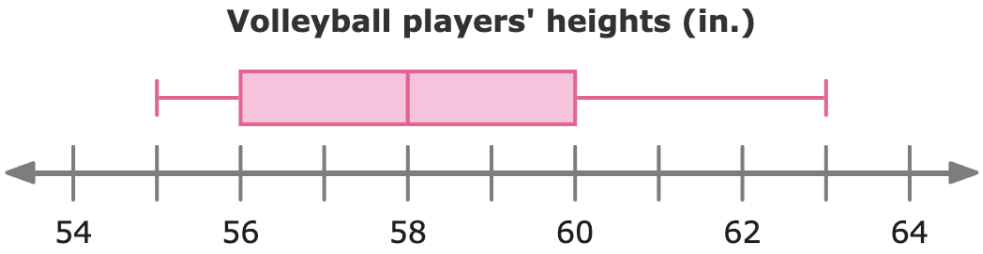
23. Find the **Mean** and the **Mean Absolute Deviation (MAD)** of the following set of data:

0, 1, 2, 7, 7, 7

Mean = _____

MAD = _____

24. The box plot shows the height of each player on a volleyball team. Answer the questions about the box plot below.



a. What is the **maximum** value of the data set? _____

b. What is the **minimum** value of the data set? _____

c. Find the **range** of the data set. _____

d. State the **median** of the data set. _____

e. State the **lower quartile** of the data set. _____

f. State the **upper quartile** of the data set. _____

g. What is the **interquartile range** of the data set? _____

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ANSWER KEY

1a) m - 7

1b) $\frac{3x}{5}$

1c) 8p + 10

2a) 9

2b) 15

2c) 81

2d) 1

2e) 1.7

2f) $2\frac{1}{2}$

3a) 6p

3b) 16m

3c) 5*y* + 4

4) 4x + 8

5) no

6a) no

7) yes

8a) y = 71

8b) x = 13

8c) x= 448

8d) $m = 1\frac{1}{14}$ or $m = \frac{15}{14}$

8e) *x* = 3.4

9) No

10) yes

11) $x > 1$

12a) Quadrant II (2)

12b) Quadrant I (1)

12c) 0.245

13a) (3 , 4)

13b) (-3 , 2)

13c) (-2 , -4)

13d) (6 , -3)

14) 7 units

15) $y + 2 = x$ OR $x - 2 = y$

16a) 72 cm^2

16b) 81.6 yd^2

16c) 21 cm^2

17) 1.8 m^3

18) 2.4 L

19a) 342 m^2

19b) 120 cm^2

20a) Mean = 7

20b) Median = 8

20c) Mode = 10

20d) Range = 8

21a) Mean = 3.4 (rounded to nearest tenth)

21b) Median = 2

21c) Mode = 1

21d) Range = 9

22a) 4 dogs

22b) Most dogs weighed between 30 and 59 pounds.

23) mean = 4

MAD = 3

24a) 63

24b) 55

24c) 8

24d) 58

24e) 56

24f) 60

24g) 58