Pre-Algebra Pre-Course Packet: Show All Work!

Name: _____ **Date:** _____

1. Devante pays $37.95 per month for his cell phone, with unlimited minutes. At this rate, what will his cell phone cost for the year? 1. _____

2. Manhattan High School is collecting soup and sandwiches for the homeless. Four classes brought in the following amounts. 2. _____

	Soup	Sandwich
Mrs. Smith	12	18
Mr. Frank	15	10
Mr. Lee	6	9
Miss Jones	12	15

Which two classes brought in the same ratio of cans of soup to sandwiches?

3. Josephina works a 40-hour week and earns $810. Which equation represents the situation if H is the amount she earns *per hour*? 3. _____

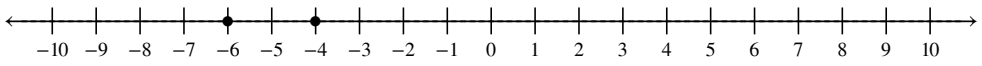
A. $40 + H = 810$ B. $40 - H = 810$ C. $H - 40 = 810$ D. $40H = 810$

4. Solve for c: $\dfrac{10}{15} = \dfrac{20}{c}$ 4. _____

5. The perimeter of an equilateral triangle is $19\frac{1}{2}$ feet. What is the length of one of the sides of the triangle? 5. _____

6. A family is saving for a down payment on a car. If the family needs \$1,800 and can save \$225 per month, how long must they save? 6. _____

7. Look at the number line. 7. _____



Which of these is *not* a correct statement about the numbers that are marked on the number line?

A. $-4 > -6$

B. -6 is less than -4

C. -6 is greater than -4

D. $-6 < -4$

8. If (x, y) is in Quadrant III, then what are the signs of x and y? 8. _____

9. Which of the following statements is true? 9. _____

A. $2\frac{1}{2} > 2\frac{3}{4}$ B. $3\frac{1}{2} < 3\frac{1}{8}$ C. $1\frac{3}{4} > 1\frac{7}{8}$ D. $5\frac{3}{8} < 5\frac{3}{4}$

10. The math scores of seven students in your study group are: 10. _____

22, 24, 25, 26, 25, 34, 35

Which measure of central tendency will you use to give an overall idea about the performance of your group?

A. Median: 25 B. Mean: 27 C. Mode: 25 D. Range: 13

11. The lowest daily temperatures in Stockholm, Sweden during the last week of December are listed in the chart: 11. _____

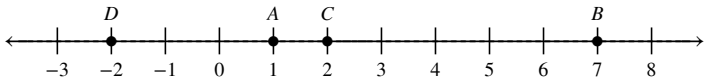
Monday	-5° F
Tuesday	-7° F
Wednesday	0° F
Thursday	-2° F
Friday	-4° F
Saturday	-6° F
Sunday	-9° F

Which two days recorded the highest temperatures?

12. Simplify: $\left|\frac{-2}{3}\right|$ 12. _____

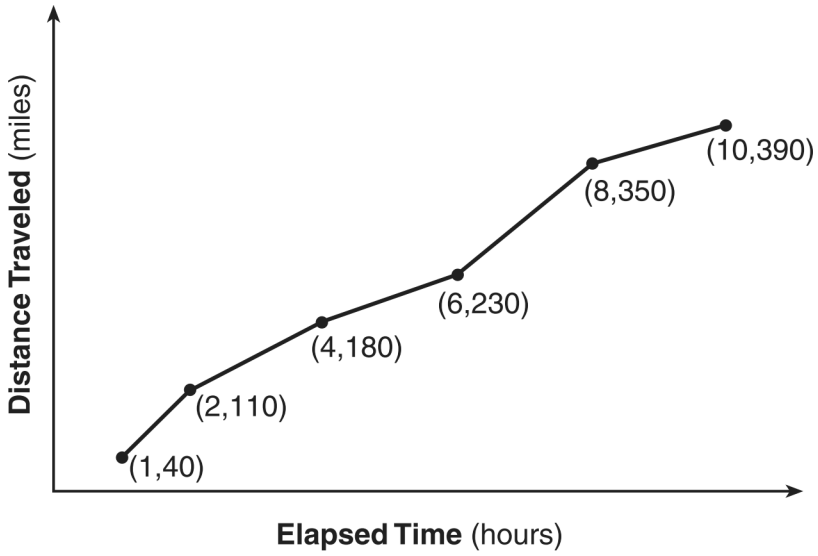
13. What is the length, in units, of a line segment with the endpoints of $(2, 5)$ and $(2, 10)$? 13. _____

14. Which of the following conditions does the number line satisfy? 14. _____



A. $B < D$ B. $C < B$ C. $C < A$ D. $C = A$

15. The Jamison family kept a log of the distance they traveled during a trip, as represented by the graph below. 15. _____

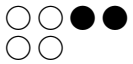
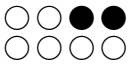


During which interval was their average speed the greatest?

A. the first hour to the second hour B. the second hour to the fourth hour

C. the sixth hour to the eighth hour D. the eighth hour to the tenth hour

16. If a black circle represents the number *positive* one and a white circle represents the number *negative* one, which diagram represents the number -2? 16. _____

A.  B.  C.  D. 

17. Look at the table. 17. _____

f	?
6	24
7	28
3	12
2	8

Which expression should go at the top of the second column?

A. $(f + 3) \times 2$ B. $f + 6$ C. $(f + 2) \times 3$ D. $f \times 4$

18. The number -27 could be used to describe which of the following phrases? 18. _____

A. traveling 27 miles
B. gaining 27 pounds
C. collecting 27 coins
D. losing \$27

19. $9 \div -\frac{2}{7} =$ _____ 19. _____

20. The ratio of boys to girls in a graduating class is 4 to 5. How many boys and girls are there if the class has 360 students? 20. _____

21. A motor cyclist is competing in a 240 mile race. 21. _____

Create a table showing what his average speed must be if he wants to finish the race in 10 hours, 12 hours, 15 hours, 16 hours, or 20 hours.

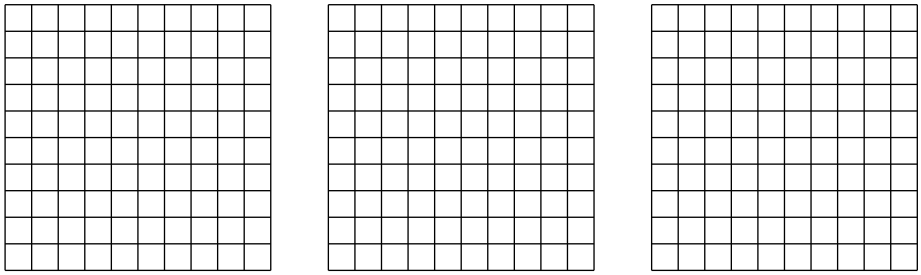
22. Mrs. Sedberry is making a fun math activity for her students. The table shows how many pieces of yarn she needs for several students. 22. _____

Number of Students	Number of Pieces of Yarn
6	36
8	48
9	54
12	72

According to the pattern in the table, how many pieces of yarn does Mrs. Sedberry need for 1 student?

23. Each grid below represents the number 1. Shade the grids to show these fractions: 23. _____

70% $\frac{3}{4}$ 0.65



24. A jet airplane travels at an average of 1,200 miles per hour. About how many miles does it travel in one minute? In one second? 24. _____

25. An online service provider charges $0.025 per minute for online access. If you used 324 minutes last month, what will your bill be? 25. _____

26. Kelton went to the community swimming pool. From the surface of the water he dove down 5 feet. Then he swam up 5 feet to the surface of the water. 26. _____

Which of these could be used to describe Kelton's actions?

A. $0 - 5 = -5$ B. $-5 - 5 = -10$ C. $5 + 5 = 10$ D. $-5 + 5 = 0$

27. Steve walked three miles in 42 minutes, 45 seconds. Ramón walked six miles in 1 hour, 22 minutes. Who walked faster? 27. _____

28. $625.25 \div 25$ 28. _____

29. Debi has a packet of 252 algebra problems to complete during summer break. Debi complained to Keith that each problem requires 15 minutes. Debi says she can only work on the packet one hour each day so there is not enough time to finish the packet. Keith disagreed. Summer break is 75 days long. 29. _____

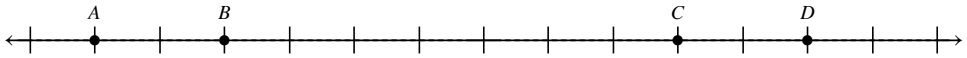
Explain the process used to calculate how many hours it would take Debi to complete the packet.

30. Study the following sets of numbers: 30. _____

Set I: 2, 6, 8, 10
Set II: 10, 15, 20, 25
Set III: 7, 14, 21, 35

Explain the relationship between the numbers in each set. Support your explanation by showing your work.

31. Label the number line below so that "0" is between points B and C. Then describe the value of the points that are graphed on the number line. 31. _____



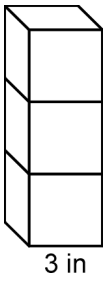
32. Complete the chart. 32. _____

Fraction	Decimal	Percent
	0.25	
		30%
$\frac{2}{5}$		
	1.5	

33. Write the following in standard form. 33. _____

$3 \times 3 \times 3 \times 3 \times 3 =$ _____

34. If you stack three cubes one on top of the other, what is the surface area of the tower of cubes? Assume each cube has 3 inch sides. 34. _____



35. $27 = \frac{n}{12}$ 35. _____

36. A jar contains four different colors of marbles. One half are red, $\frac{1}{4}$ are white, $\frac{1}{6}$ are yellow, and the rest are green. 36. _____

If there are 96 marbles in the jar, how many are yellow?

37. A math class would like to make a graph representing the relationship between time of year and rainfall. Which of the two variables would be placed on the x-axis, time of year or rainfall? Support your answer with an explanation. 37. _____

38. Write an algebraic expression for five more than twice a number. 38. _____

39. Evaluate $n^2 - 2n$, for $n = -5$ 39. _____

40. Carpet costs \$8.50 per square foot. Mr. Cabral wants to carpet a hallway that requires 12 square feet. He paid \$102 for the carpet. 40. _____

Work out the problem to see if he paid the correct amount.

Did he pay the correct amount? YES NO

Circle the operation you used to solve the problem: addition subtraction multiplication division

Could you solve the problem using a different operation? Explain or show your answer.

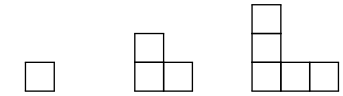
41. **Part 1** 41. _____

A triangle has sides of length $2x$, $3x$ and $4x$. Find the perimeter of the triangle if $x = 20$ cm. Describe how you found your answer.

Part 2

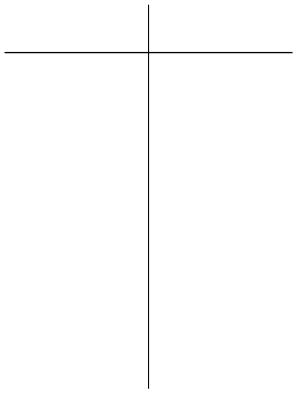
What happens to the perimeter if 1 cm is added to the length of each side? Predict what will happen to the perimeter if 2 cm are added to each side? If 3 cm are added? Describe the conclusions you can make.

42. a) Randy created a pattern with tiles. Complete the pattern. 42. _____



Step 1 Step 2 Step 3 Step 4 Step 5 Step 6

b) Record the pattern in the table below. Write each step number in the left column and the corresponding number of tiles in the right column. Be sure to label the columns.



c) Explain how you completed the pattern and state at least one rule for the information in the table.

43. The following data are test scores for a class of 20 students: 43. _____

77, 54, 71, 81, 54, 87, 73, 67, 65, 73, 90, 56, 75, 83, 66, 73, 63, 62, 55, 81

a) Complete the table.

Interval	Number (frequency)
91–100	
81–90	
71–80	
61–70	
51–60	

b) In which interval does the mode lie?

c) In which interval does the median lie?

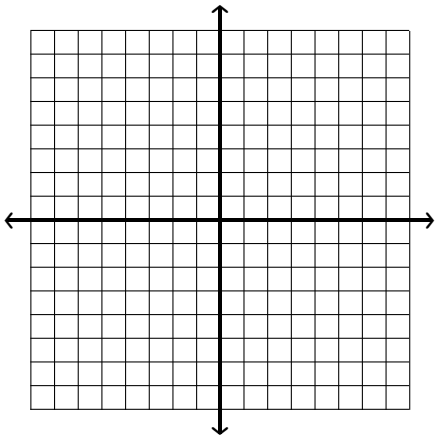
44. Annette has earned the following scores on her tests: 83, 86, 92, 86 and 96. 44. _____

a) Find the mean, median and mode of her scores.

b) Which measure (mean, median, mode) is best for calculating her final grade? Why?

c) If Annette takes another test, and 100 is the top score, what is the highest possible average she could receive on all six tests?

d) What score on a sixth test would Annette have to receive if she wants an overall average of at leat 90%?

45. 

45. _____

On the grid, draw a quadrilateral with these vertices: $A(-3, 5)$, $B(-5, 5)$, $C(-5, -5)$ and $D(7, -5)$.

a) What is the shape of the quadrilateral?

b) What characteristics of the quadrilateral helped you identify what type of quadrilateral it is?

c) What is the area of the quadrilateral?