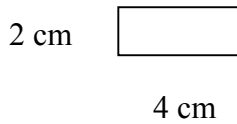


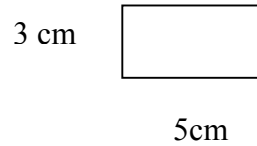
Seventh Grade
Math Mastery Assessment

1. _____ $3^2 + 4^2$ has the same value as
- a) 5^2 c) 12^2
b) 7^2 d) $2^2 + 5^2$
2. _____ At Greenlake Middle School there are 440 boys. The ratio of boys to girls is 4 to 3. Find the number of girls in the school.
3. _____ Which expression will give an answer greater than 0?
- a) $-1 + -2$ c) $-1 \div 2$
b) $1 - -2$ d) $-1 - -2$
4. Evaluate: $(80 - 2 \cdot 6^2)(2 + 4/2) =$ _____
5. _____ Which of the following has a value less than $1/4$?
- a) 35% c) 15%
b) 25% d) 40%
6. Show *at least 2* different ways to calculate 15% of \$28.00 that you might use to calculate the answer mentally.
7. _____ You have a choice of buying two pizzas with a radius of 3 inches or one pizza with a radius of 6 inches. Which choice would give you more pizza?
- a) The two small pizzas would give you less pizza than the one large pizza.
b) The two small pizzas would give you more pizza than the one large pizza.
c) The two small pizzas would give you the same amount of pizza as the one large pizza.
8. Draw a picture showing how the formula for the area of a triangle is related to the area formula for parallelograms. Explain briefly.

9. A friend tells you that she has discovered that as the perimeter of a shape increases, so does the area. She shows you these two pictures:



$P = 12 \text{ cm}$ $A = 8 \text{ cm}^2$



$P = 16 \text{ cm}$ $A = 15 \text{ cm}^2$

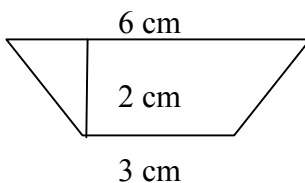
You decide to investigate her claim.

A. Draw at least 3 more rectangles and compute the area and perimeter of each.

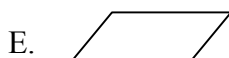
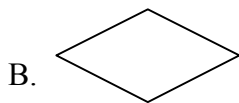
B. Is your friend's conclusion correct? Why or why not?

C. Write a response to your friend based upon your findings.

10. What is the area of this isosceles trapezoid? _____ Show all your work.



11. Given the following shapes:



Name as many as apply.

A. Which are parallelograms? _____

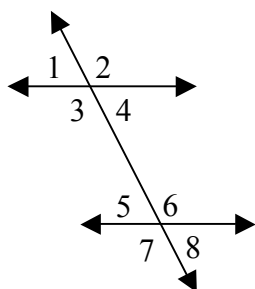
B. Which are quadrilaterals? _____

C. Which are squares? _____

D. Which are rectangles? _____

E. Which are rhombi? _____

12.



Based on the above picture are the following statements True or False?

A. _____ $\angle 4$ and $\angle 6$ are corresponding angles.

B. _____ Corresponding angles are congruent to each other.

C. _____ $\angle 5$ and $\angle 8$ are vertical angles.

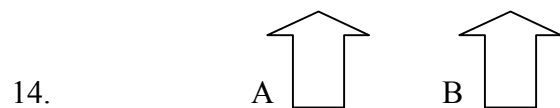
D. _____ Vertical angles share a side between them.

E. _____ $\angle 1$ and $\angle 7$ are supplementary angles.

13.

4	3	2
1	5	

The numbers in the grid above show the number of blocks that are stacked on each square. Draw a front view of the blocks shown in the grid.



The relationship of figure A to figure B is

- a) reflection
- b) rotation
- c) translation
- d) Both A and C
- e) Both B and C

15. You have just polled you class on their favorite school lunch.

Hotdogs	2
Hamburgers	10
Pizza	8
Chicken Sandwich	11

Graph this information using an appropriate graph. Explain your choice of graph.

16. _____ Joe is trying to decide whether to play a certain game at the carnival. A player tries to knock down two milk bottles. These are the results so far.

Both standing	24
One standing, One down	14
Both down	2

Based on the results, what is the experimental probability of knocking down two bottles and winning the game?

17. Jonah has 5 different shirts, 3 hats, and 4 pairs of pants. Show at least 2 different ways to find the total number of different outfits he can wear. Assuming he wears 1 shirt, 1 hat, and 1 pair of pants each time.

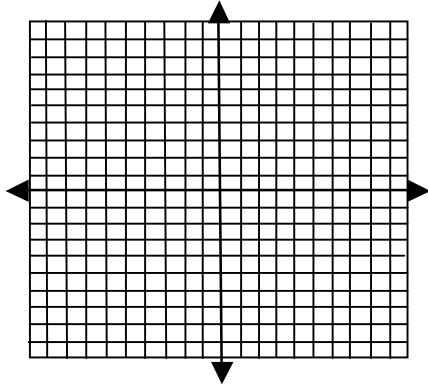
18. Jason and Nikki are playing a game with a number cube. Jason can skip his turn or roll the cube. If he rolls a 3 or more he wins. If he rolls less than a 3 he loses. Use probability to decide what Jason should do.

19. Your math test scores are 90,78,95,94,96,85,87, and 80. When asked by your parent, "How are you doing in math?" What would be the most appropriate measure of central tendency (mean, median or mode) to use and why?

20. _____ What is the probability that Shelley will roll an even sum when she rolls 2 dice? _
Show your work.
21. _____ If you toss 3 coins, what is the theoretical probability of getting all tails? ____
Show your work.
22. _____ True or False. You have a blue, red and green marble in a bag. You choose a red marble and put it back in the bag. Then you choose a blue marble. This is an independent event
23. Lesley helped put numbers on new lockers at school. The numbers started at 51 and continued on consecutively. She applied the numbers one digit at a time. When finished, she had used 413 digits. How many new lockers were there?
Explain your thinking at each step and your answer(s).
24. For this function: $y = 3x + 4$,
A. Make a table of 5 ordered pairs in the solution set.

x	y

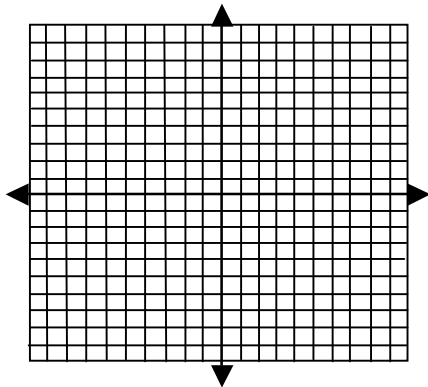
B. Graph the function.



C. Give a real-life example for this algebraic expression by translating it into words:
 $y=3x + 4$

25. Plot and label the following points on a coordinate graph:

A (2, 7) B (3, 0) C (-2, 4) D (5, -1) E (0, -3)



26. A. If you travel 130 miles in 2 hours, what is your average rate of speed? _____
Show your work.

B. If you decrease the distance by 10 miles, but keep the time the same, what happens to the average rate? _____ Show your work.

Seventh Grade
Math Mastery Assessment
Answer Key

1. a

2. 330

3. d

4. 32

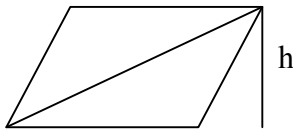
5. c

6. Possible answers:

- I pushed these keys on my calculator: $15 \div 28 =$ and found the answer was 4.2. 4.2 in terms of money would be \$4.20.
 - I converted the 15% to a decimal and multiplied: $.15 \cdot 28 = 4.2$, which is the same as \$4.20
 - I found 10% of 28.00 by moving the decimal point 1 place to the left: 2.80. I then found the additional 5% by taking half of 2.80: 1.40. Next I added the 10% and the 5%: $2.80 + 1.40 = 4.20$
 - I found 10% of 28.00 by moving the decimal point 1 place to the left: 2.80. I then multiplied that number by 3 to find 30%: $2.80 \cdot 3 = 8.40$. Finally, I took half of the 30% amount to get 15%: $\frac{1}{2} \cdot 8.40 = 8.40 \div 2 = 4.20$.
 - I found that 1% of \$28.00 would be 28 cents and then multiplied that times 15. $28 \cdot 15 = 200 + 80 + 100 + 40 = 420$. 420 cents is \$4.20.
 - I used a proportion $\frac{15}{100} = \frac{x}{28.00}$. Then I simplified for x: $(\frac{15}{100}) 28.00 = x$; $\$4.20 = x$.
- Other correct creative responses are acceptable.

7. a

8.



base

Area of a parallelogram = $b \cdot h$

A triangle is half of a rectangle, therefore the area of a triangle can be found by the following formula: $A = \frac{b \cdot h}{2}$ or $\frac{1}{2} b \cdot h$

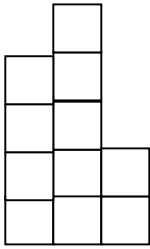
9. Students may draw a number of different rectangles. Check that area and perimeter have been figured correctly. They should determine that some rectangles have the same perimeter but different areas and some have the same area but different perimeters. A longer perimeter does not necessarily mean a larger area.

10. 9 cm^2

11. A. (A, B, D, E) B. (A, B, C, D, E) C. (B) D. (A, D) E. (B, D)

12. A. F B. T C. T D. F E. T

13.



14. d

15. A bar graph, or a circle (pie) graph would be appropriate in this situation. I would use a bar graph, because it is used to show frequency. The vertical axis should be labeled to show frequency and the horizontal axis should show the lunch choices.

16. $1/20$

17. Multiply $5 \times 3 \times 4 = 60$; draw a tree diagram; draw a Carroll diagram

18. $P(\geq 3) = 4/6 = 2/3$.

Jason has a better chance of winning if he rolls.

19. Mean = 88.125 which would round down to 88.

Median = 88.5 which would round to 89.

Both are about the same, but I would tell my parent the score for the median, because it would round up to a percent higher.

20. $18/36 = 1/2 = 50\%$

21. $1/8$

22. True

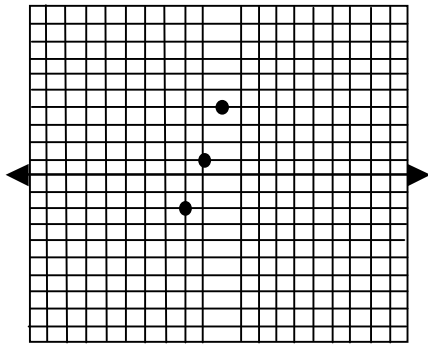
23. 154

24. A.

x	y
0	4
1	7
-1	1
2	10
-2	-2

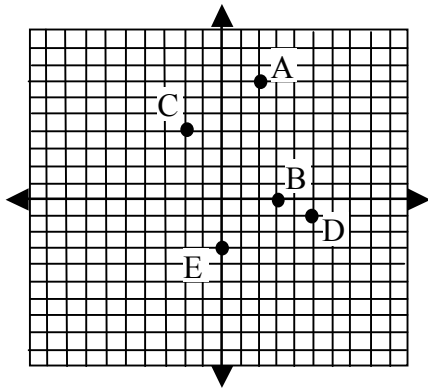
B.





C. Jack is ordering books from Amazon.com. It cost \$4 for shipping any amount of books. Each book costs \$3. What will it cost Jack to buy x books?

25.



26. A. $130/2 = 65$

B. $120/2 = 60$ mph; It is reduced by 5 mph.