Milestones Review Packet 7th Grade Math Miller

**Unit 1 Number System** **Name _____**

For questions 1-4, find the decimal form of the given number.

1. -1/4 _____ 2. 2 5/9 _____ 3. 5/8 _____

4. How is 24/27 written as a decimal?
A. 0.8 B. 0.8 C. 0.9 D. 1.125

5. Timothy bought 9 tomatoes for $4 at a farm stand. What is the price per tomato in decimal form? Round your answer to the nearest hundredth. _____

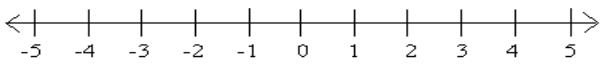
6. James worked for 16 hours last week and was paid $157. How much did James earn per hour to the nearest cent? _____

For questions 7-8, use <, >, or = to compare the numbers.

7. 9.95 _____ 9 10/11 8. 3/8 _____ 0.37

For question 9, plot and label each point on the number line.

9. 2 2/5 1.87 -1 ¾




10. Jimmy measured four pieces of wood. Their measures are 4.2 ft, 9/2ft, 4.02 ft, and 4 2/9 ft. What is the length of the shortest piece? _____
What is the length of the longest piece? _____

For questions 11-15, write answers in simplest form.

11. -0.7 + 2.1 = _____ 12. -49 – (-49) = _____

13. 7/8 + (-3/4) = _____ 14. 8 ¾ - 10 2/3 = _____ 15. 2/3 – (-1/3) = ___

16. On a cold winter day, the low temperature was 10°F. Due to the wind chill, it felt like -18°F. What was the difference between the actual temperature and the wind chill temperature? _____

17. A submarine is at a depth of 400 meters below sea level. The submarine then rises by 185 meters. What is the depth of the submarine now?
A. 215 meters above sea level C. 585 meters below sea level
B. 215 meters below sea level D. 585 meters above sea level

For questions 18-23, write the answers in simplest form.

18. $-52/4 =$ _____ 19. $4.41 \div 9 =$ _____ 20. $-15.2 \cdot 3.6 =$ _____

21. $5/6 \div 8/9 =$ _____ 22. $2/3 \cdot 2\ ¼ =$ _____ 23. $-64 \cdot 5/8 =$ _____

24. Which statement below is ALWAYS true?
    A. The product of a number and zero is equal to that number.
    B. The product of two negative numbers is negative.
    C. The product of a positive number and a negative number is positive.
    D. The product of two positive numbers is positive.

25. A baseball was pitched at a speed of 75.2 miles per hour. A tennis ball was served at a speed of 1.5 times faster than this. How much faster was the speed of the tennis ball than the speed of the baseball? _____

**Unit 2 Expressions and Equations**

For questions 1-4, simplify each expression.

1. $12y – 4y$ _____ 2. $3h – 10h + 6h$ _____

3. $4(3p – 1) + 9$ _____ 4. $13 – 5(m + 4)$ _____

For questions 5-6, factor each expression into simplest form.

5. $3x – 27 =$ ___ (x - ____) 6. $10 – 5k =$ ( ____ - k) ____

7. Which of the following expressions has the same meaning as "increase by 20%"?
    A. 0.2n B. 0.8n C. 1.2n D. 1.8n

8. Which mathematical inequality represents the following sentence?
    "Five more than one-third of a number is less than or equal to negative four"
    A. $1/3x + 5 > -4$
    B. $1/3x + 5 \geq -4$
    C. $1/3x + 5 < -4$
    D. $1/3x + 5 \leq -4$

For questions 9-12, use the variable ***n*** to represent the unknown number and write the correct equation or inequality.

9. Six less than twice a number is equal to ninety. _____
10. Three-eights of a number is at most seventy-two. _____
11. The difference between a number multiplied by seven and fourteen is greater than nine.

_____

12. The quotient of a number and eight, increased by 3/4 , is at least -1/4.

_____

13. Michael bought 4 pairs of socks. He paid $7.16 after using a $2-off coupon. Write an equation that can be used to find the regular price, *p*, of a pair of socks.
equation _____

14. Matthew had $4.10 in his pocket. He bought 3 notebooks. Now he has $0.35 in his pocket. Which equation below can be used to find how much each notebook, *n*, costs?

A. $4.10 - 3n = 0.35$
B. $3n - 0.35 = 4.10$
C. $4.10 + 0.35 = 3n$
D. $3n + 4.10 = 0.35$

For questions 15-18, solve the equation for the given variable.

15. $19 = 3x + 7$

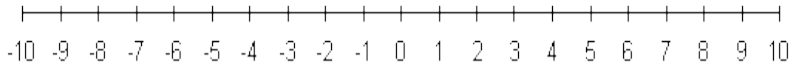
16. $5.2 = 1.4y - 1.8$

17. $-8 + 1/5z = 0$

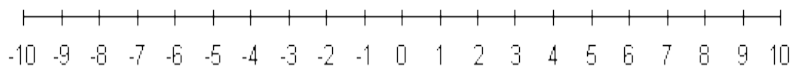
18. $-2 (c + 6) = 1$

For questions 19-20, solve the inequality and graph the solution on the number line.

19. $6x + 7 > -17$




20. $1/2x - 3 \leq -1$




21. Ben had $112 in his savings account. Then he deposited the same amount of money into his savings account in each of the next 4 months. Now he has $333 in his savings account. How much money, m, did Ben deposit each month?

_____

22. Nick bought a bag of jelly beans. He ate 15 jelly beans and then gave one-third of the remaining jelly beans to his brother. If he gave 25 jelly beans to his brother, how many jelly beans, j, were in the bag that Nick bought?

    _____

23. Last week, Michael went canoeing on a river. The cost to rent a canoe was $20 plus $9.75 per hour. For how many hours, h, did Michael rent the canoe if he spent $78.50 in all?

    _____

24. At the deli, sandwiches with 6 ounces of meat cost $3.89. You can order extra meat for $0.25 per ounce. If Greg's sandwich cost him $5.14, how much extra meat, m, did he order?

    _____

25. The perimeter of a rectangle is equal to twice the sum of its length and its width. One rectangle has a length of 13 inches and a perimeter of 42 inches. Write an equation that can be used to find the width, w, of the rectangle. _____

**Unit 3 Ratios and Proportions**

For questions 1-3, find the unit rate.

1. Melanie rode her bike for 7/8 mile in ¼ hour. _____
2. George walked ½ mile in 8 ½ minutes. _____
3. A baker can prepare 2 ½ dozen muffins in ¼ hour. _____

4. Ben is buying a refrigerator that costs $849. If the sales tax rate is 8%, how much tax will Ben have to pay on the refrigerator? _____

5. The regular price of a sweater is $32. For a sale, the price of the sweater is marked down 30%. What is the sale price of the sweater? _____

6. Cara hiked 14 miles in 4 hours. Leslie hiked 21 miles in 6 hours. Do these rates demonstrate a proportional relationship? _____

7. Which pair of ratios does NOT demonstrate a proportional relationship?
   A. 8/12 and 6/9 B. 9/24 and 6/16
   C. 12/15 and 15/20 D. 27/36 and 6/8

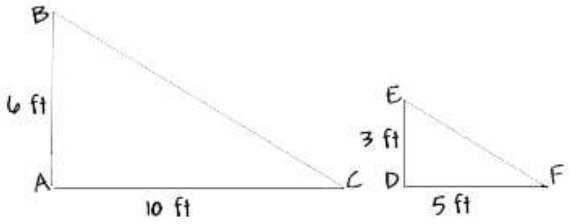
8. The lunch platter at one restaurant costs $7. Write an equation that shows the total cost, *c*, of *p* people buying the lunch platter. _____

9. On a map, 3 cm represent 60 km. What is the constant of proportionality (unit rate)?

    _____

10. The Miller's electric bill jumped from $84 in May to $105 in June. What is the percent increase in their electric bill? _____

11. Look at the figures below. Do the corresponding sides form a proportional relationship?
_____




12. What is the missing value in the following proportion? n = _____

$$\frac{8}{40} = \frac{12}{n}$$

13. The price of a lawnmower went from $450 in May to $460 in September.
What is the percent of decrease? _____

14. Write an equation that represents the proportional relationship shown in the table.

| **x** | **6** | **4** | **2** |
|---|---|---|---|
| **y** | **3** | **2** | **1** |

_____

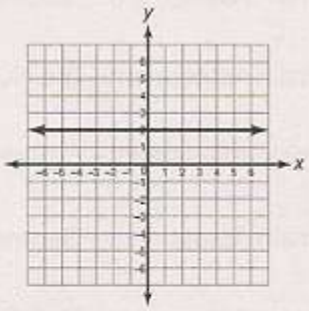
15. Jesse is buying a stereo that costs $799. If the sales tax is 7%, how much will Jesse have to pay for the stereo?
A. $1,358.30 B. $55.93 C. $854.93 D. $239.70

16. The regular price of a DVD is $24. During a sale, the price of a DVD is marked down 30%. What will be the sale price of the DVD?
A. $16.80 B. $24.30 C. $23.70 D. $72.00

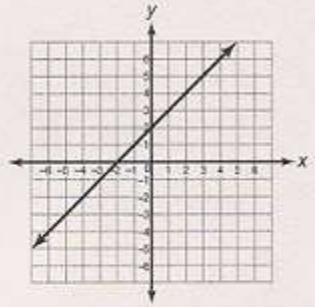
17. A clothing store is having an anniversary sale. Every piece of clothing in the store is marked down 15%. What is the sale price of a belt that has a regular price of $23?
A. $34.50 B. $19.55 C. $3.45 D. $26.45

18. Which of the following graphs shows a proportional relationship?

A.



C.



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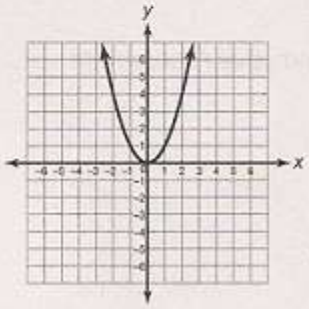
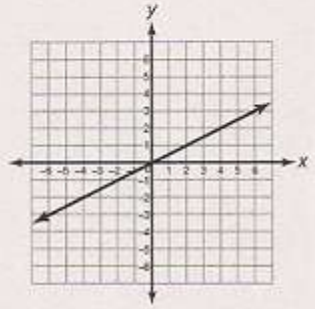


D.



For questions 19-21, find the constant of proportionality or unit rate.

| Boxes of Candy (x) | 2 | 5 | 9 | 7 | 10 |
|---|---|---|---|---|---|
| Pieces of Candy (y) | 32 | 80 | 144 | 112 | 160 |

19. For every box of candy you get __ pieces. C.O.P or unit rate _____

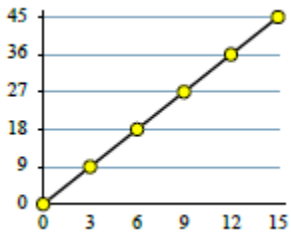
| Cans of Paint (x) | 5 | 10 | 6 | 9 | 2 |
|---|---|---|---|---|---|
| Bird Houses Painted (y) | 15 | 30 | 18 | 27 | 6 |

20. For every can of paint you could paint _ bird houses. C.O.P or unit rate _____

| Chocolate Bars (x) | 6 | 4 | 10 | 3 | 8 |
|---|---|---|---|---|---|
| Calories (y) | 1,212 | 808 | 2,020 | 606 | 1,616 |

21. Every chocolate bar has ___ calories. C.O.P or unit rate _____

For questions 22-25, write an equation in the form of y = kx for each graph of a proportional relationship.

22. 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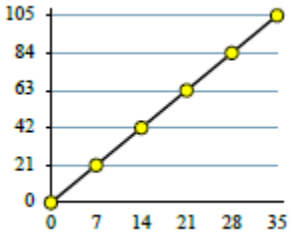
23. 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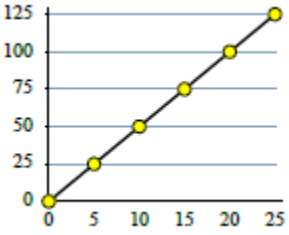
24. 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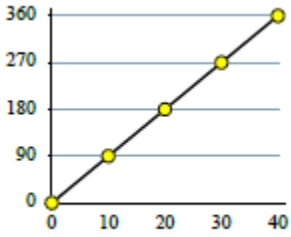
25. 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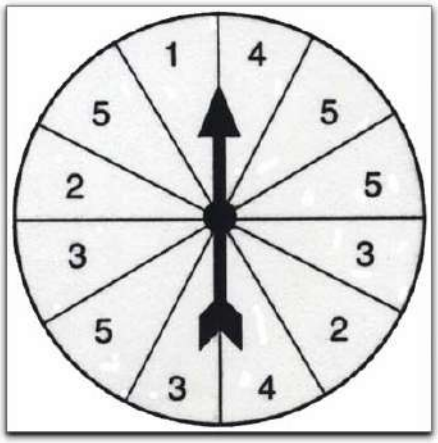
**Unit 4 Statistics and Probability**

1. Tom has a box that holds 13 blue marbles, 9 purple marbles, 3 white marbles, and 20 red marbles. He pulls one marble out of the box without looking. Find the probability of each color below.

P (blue) _____ P(purple) _____ P (red) _____

Use the spinner below for questions 2-6.




2. What is the P(0)? _____

3. What is the P(odd number)? _____

4. What is the P(number less than 6)? _____

5. What is the P(3)? _____

6. If the spinner is spun 200 times, about how many times would you expect the spinner to land on a 5? _____

7. Grace tossed a coin and rolled a number cube numbered 1-6.
What is the probability of tossing heads on the coin? _____
What is the probability of rolling an odd number on the number cube? _____ Are the outcomes equally likely? _____ Why?
_____

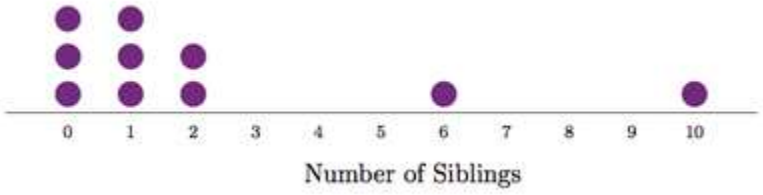
8. Nick is trying to determine the favorite food of students in his school. Which sample below would be a random sample?
A. all of Nick's friends
B. every third student entering the school in the morning
C. the students who are on the bus with Nick
D. the students in Nick's math class

9. Bella plans to study the amount of time students in her school spend on homework. Which sample below is biased?
A. a sample consisting of students in the honors classes
B. a sample consisting of every fifth student who enters the cafeteria during lunchtime
C. a sample consisting of one student randomly chosen from every homeroom
D. a sample consisting of every tenth student from an alphabetical list of all students in the school

10. Mary drives to work every morning. The list below shows the time, in minutes, it took her to drive to work on 11 different days.
**21, 22, 22, 23, 24, 25, 25, 26, 26, 35, 38**

What is the lower quartile of the data set?
A. 22 minutes B. 24 minutes C. 25 minutes D. 30 minutes

The following dot plot shows the number of siblings for Ashley's classmates.




11. What is the mode number of siblings? _____
12. What is the mean number of siblings? _____
13. Are there any outliers? _____ If so, what? _____
14. How does the outlier affect the mean?
_____

15. Parker is making an ice cream sundae. The list below shows the choices of ice creams, syrups and toppings.

    Ice Cream: vanilla or chocolate
    Syrup: butterscotch, strawberry or hot fudge
    Topping: nuts or sprinkles

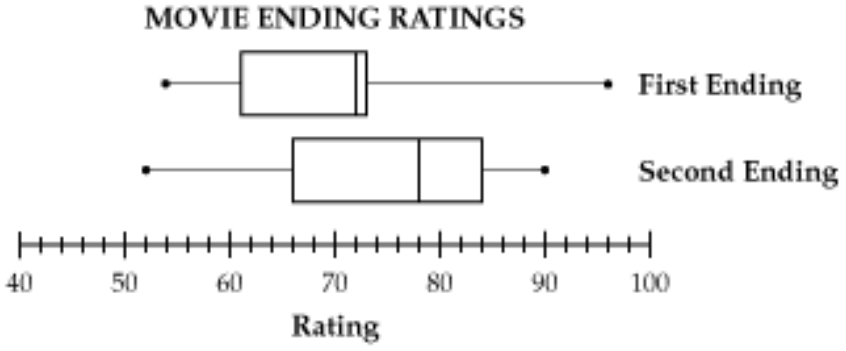
    Draw a tree diagram to show all the choices Parker has for his ice cream sundae.

16. The golf scores of the members of a golf team for 18 holes were 89, 90, 87, 95, 86, 102, 79, and 108. What is the mean absolute deviation of the scores?
    A. 7.25 B. 9.2 C. 72.5 D. 92

17. The following list shows the annual number of wins that a baseball pitcher had in each of his twenty years as a baseball pitcher.
    **7, 9, 9, 10, 10, 13, 17, 18, 18, 19, 20, 21, 24**

    What is the lower quartile (Q1)? _____
    What is the median number of wins (Q2)? _____
    What is the upper quartile (Q3)? _____
    What is the inter-quartile range (IQR)? _____
    What is the maximum number of wins? _____

The box and whisker plot below shows the ratings that audiences gave a movie with two different endings.




18. According to the plot above, which ending did most of the audiences prefer? _____
19. What was the median rating for the first ending? _____ second ending? _____
20. What was the range of the ratings for the first ending? _____ second ending? _____
21. Which ending's ratings were more spread out? _____

22. A bowl contains 6 red candies, 8 orange candies, and 10 yellow candies. What is the probability that a candy chosen at random will be yellow?

A. 3/10 B. 3/8 C. 5/12 D. 5/7

23. James has 10 shirts in his drawer: 3 red, 2 black and 5 white. He has 6 pairs of shorts in his drawer: 3 black, 1 blue, and 2 khaki. What is the probability that a shirt and a pair of shorts chosen at random are both black? _____

24. Mrs. Smith has to choose two pieces of fruit for her lunch. If she randomly takes two pieces of fruit from a bowl of 8 oranges and 8 apples, what is the probability she will choose two apples? (Mrs. Smith does not put back the first piece of fruit before she takes the second piece of fruit.)

A. ¼ B. 7/30 C. 1/32 D. 1/64

25. Tim, Josh and Chris are standing in line to buy tickets at the movies. Make a list to show all the different ways they can stand in line. How many different ways can they stand in line? _____

**Unit 5 Geometry**

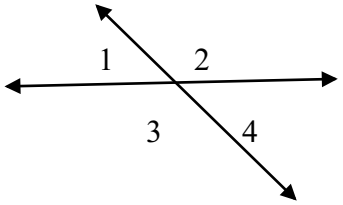
1. If the radius of a circle is 15 ft, what is its diameter? _____

2. Which of the following quadrilaterals has exactly **one** pair of parallel sides?
A. parallelogram B. rectangle C. trapezoid D. square

3. Which set of measurements can represent the lengths of the sides of a triangle?
A. 4 cm, 8 cm, 6 cm B. 7 cm, 5 cm, 13 cm
C. 9 cm, 3 cm, 3 cm D. 8 cm, 5 cm, 3 cm

4. If the diameter of a circle is 12 cm, what is its radius? _____

5. If the measure of ∠1 is x and the measure of ∠2 is x + 50, what is the measure of ∠4?




6. A square has a perimeter of 48 inches. What is the area of the square?
_____

7. Which set of measures could NOT represent the measures of the angles of a triangle?
A. 75°, 35°, 70° B. 120°, 35°, 25° C. 85°, 55°, 50° D. 90°, 15°, 75°

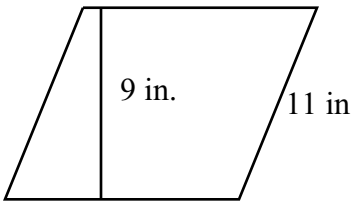
8. A round table has a diameter of 35 inches. What is the approximate circumference of the table? Use 3.14 for $\pi$.

Circumference = _____

9. A circular plate has a radius of 11 cm. What is the area of the plate rounded to the nearest whole number? Use 3.14 for $\pi$

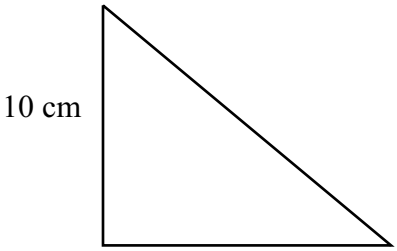
Area = _____

For questions 10-11, find the area of the figure.
10.



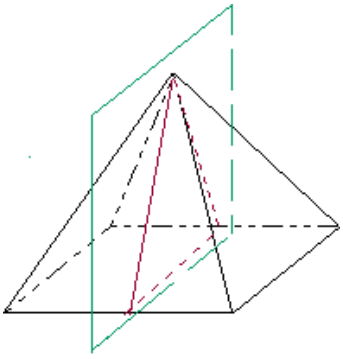

Area = _____

11.




Area = _____

12. What is the shape of the cross-section than will be formed by the plane if it passes through the vertex of the figure?



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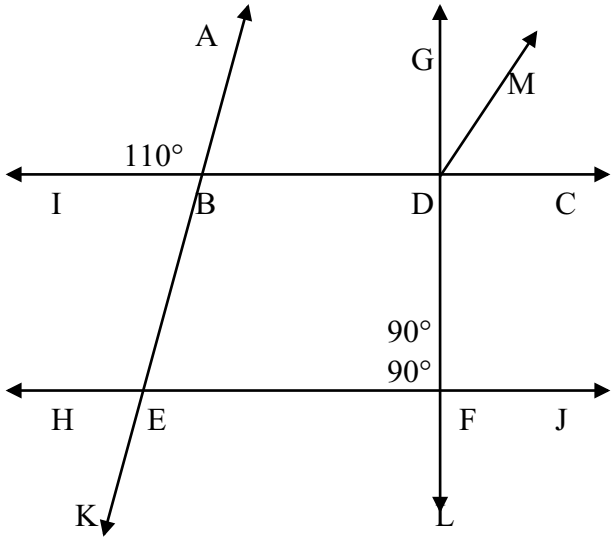
13. Alana keeps her sweaters in a storage box under her bed. The box is 30 in. long, 18 in. wide, and 7 in. high. What is the volume of the storage box?

Volume = _____

For questions 14-17, use the figure below to find the angle measures.



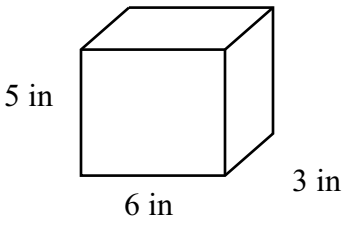

14. ∠ ABD = _____

15. ∠ JFL = _____

16. ∠ GDM = _____

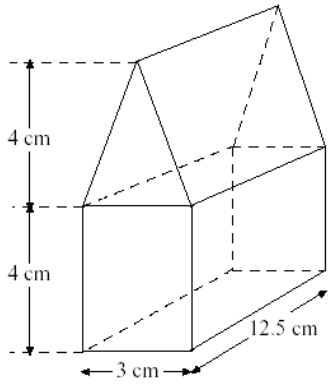
17. ∠ IBE = _____

18. What is the surface area of the rectangular prism?




Surface area = _____

19. Find the volume of the figure below. (Hint: find the volume of the triangular prism on top and then the volume of the rectangular prism on bottom and then add them together.)




Volume = _____

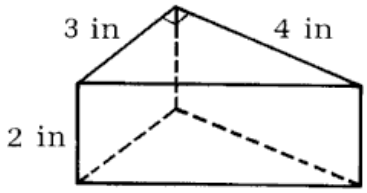
20. Jill is going to mail a care package to her brother in the military. She has two cardboard boxes. Which box would hold more? (Hint: which box has a greater volume?)

Box #1 – length 48 cm, width 22 cm, height 30 cm

Box #2 – length 32 cm, width 18 cm, height 40 cm

_____

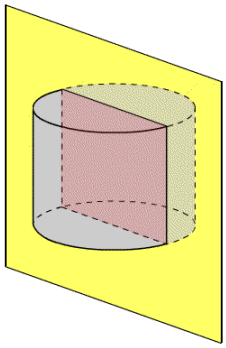
21. Find the surface area of the triangular prism below.



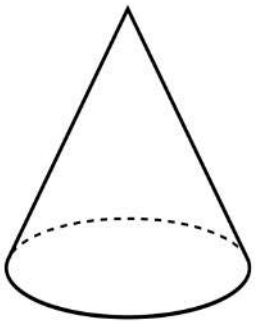

Surface Area = _____

22. What is the cross-section of the cylinder below?

A. circle B. ellipse C. square D. rectangle



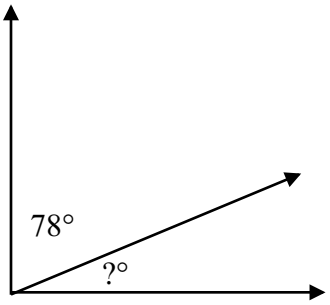
23. What cross-section could **NOT** be formed by slicing the cone below?



A. circle B. rectangle C. ellipse D. triangle

24. Two supplementary angles have measures of $x°$ and $3x - 4°$. What is the value of x?
x = _____

25. Find the measure of the missing angle below.

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**Sample Constructed Response Questions**

**Note: There will be two (2) questions like these on the Milestones Test. Remember, you get more points for showing your work.**

1. Amy has 3 pieces of rope that have lengths of 15 1/3 feet, 20 ½ feet and 30 ¾ feet.

Part A – How many feet of rope does Amy have in all? _____

Part B – If Amy cuts each length of rope into 3-foot pieces, how many 3-foot pieces of rope will she have? _____

Part C- Explain how you found your answer. _____
_____
_____

2. A washing machine normally sells for $650.

Part A – During a holiday sale, each washing machine is marked down 20%. How much will it cost to buy the washing machine during the sale? _____

Part B – There is a delivery fee of $39 added to the sale price. What percent of the sale price is the delivery fee? _____

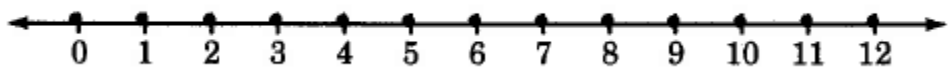
Part C – The sales tax rate is 4%. How much tax will be paid on the washing machine during the sale? Do not include the delivery fee. _____

3. Ed is ordering magazines online. Each magazine costs $6. Shipping will cost an additional $4 for the entire order.

Part A – Write an inequality that can be used to find the number of magazines, n, Ed can order if he spends no more than $42._____

Part B – What is the greatest number of magazines Ed can order? _____
Explain your answer. _____
_____
_____

Part C – Graph the solution set on the number line.




4. The radius of a circle is 14 inches.

Part A – What is the circumference of the circle? Use 3.14 for pi.

_____

Part B – Suppose the radius is doubled to 28 inches. What is the circumference of this circle?

_____

Part C – Explain how doubling the radius affects the circumference.

_____

_____

5. Kristi and Dan are training for an upcoming swim meet. Their practice times in seconds for the 50-meter freestyle race are listed below.

Kristi – 52, 52, 53, 54, 56, 59, 61, 61
Dan – 51, 52, 52, 53, 53, 54, 54, 55

Part A – Find the mean and the mean absolute deviation of Kristi's times.
mean _____ mean absolute deviation _____
Part B – Find the mean and the mean absolute deviation of Dan's times.
mean _____ mean absolute deviation _____

Part C – How much greater is the mean time for Kristi than the mean time for Dan? _____

Part D – About how many times greater is the mean absolute deviation for Kristi's times than for Dan's times? _____