

### 3 Seeds/Prairie Hills Junior High 8th Grade Packet

1.a.  $5^7 \times 5^{-10} =$

- A.  $1/3$    B.  $5^{-2}$    C.  $1/125$    D.  $5^{-17}$

2. If  $2x^3 = 54$ , what is  $x$ ?

- A. 1   B. 5   C. 2   D. 3

3.a. The answer for  $20000000 \times 3.5 \times 1000000$  in scientific notation is

(Hint: put 20000000 and 1000000 in scientific notation first)

- A.  $7 \times 10^{13}$    B.  $3.5 \times 10^{13}$    C.  $2 \times 10^{13}$    D.  $7 \times 10^{12}$

b.  $0.0004 \times 4000$  as a decimal is \_\_\_\_\_ and as a fraction is \_\_\_\_\_

4.a. Which set contains only rational numbers?

- A.  $\{\sqrt{49}, \sqrt{7}, 1/2, 9/5\}$   
B.  $\{\sqrt{121}, 12/5, \sqrt{169}, 0.333333333333\}$   
C.  $\{4 \times \sqrt{5}, 2, \sqrt{100}, 0\}$    D. 0

b. Pull out all the irrational numbers from each set above and write them down here.

\_\_\_\_\_

5. To go to school, you have to walk 6 miles east and then 8 miles north ?

a. Draw a figure representing your path from home to school

b. Draw a line representing the shortest distance you could have taken. Then, calculate this distance \_\_\_\_\_

6. The formula for the area of a circle is shown below

$$A = \pi \times r^2$$

a. Which of the following is the correct expression for  $r$  or the radius in terms of  $A$  and  $\pi$ ?

**A.**  $r = \sqrt{(A / 2\pi)}$       **B.**  $r = \sqrt{(2A / \pi)}$       **C.**  $r = \sqrt{(\pi / A)}$       **D.**  $r = \sqrt{(A / \pi)}$

b. Use the correct formula you found in part a and  $\pi = 3$  to find  $r$  when  $A = 48$  square feet.

$r =$  \_\_\_\_\_

7. A company charges a flat fee of 1500 dollars to rent a yacht. In addition, renters must pay 100 dollars per hour.

a. Which equation shows the cost  $C$  to rent a yacht for  $h$  hours?

**A.**  $C = 100 + 1500 \times h$     **B.**  $C = 1500 \times h$     **C.**  $C = 100 \times h + 1500$     **D.**  $C = 100 \times h + 1500 \times h$

b. How much would it cost you to rent a yacht for 5 hours?

8. Escalator 1 has a rise of 6 and a run of 4. Escalator 2 has a rise of 12 and a run of 6. Do the escalators have the same slope? Explain with math computation.

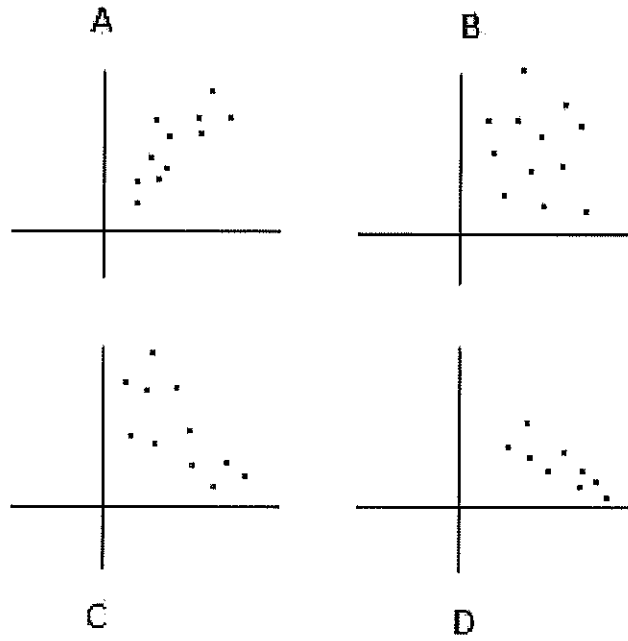
9. Celita has a garden shaped like a square. How does the area change if she triples the length of each side?

- A.** The area of the garden is tripled    **B.** The area of the garden is nonupled (times 9)  
**C.** halved    **D.** sextupled (times 6)

10. Find the volume of a cone with a radius of 8 inches and a height of 3 inches.

(Hint: Use  $v = \frac{1}{3} (\pi \times r^2 \times h)$ )

11.



a. Look at the figure above and then tell which graph(s) show the following correlation.

**Positive correlation** \_\_\_\_\_

**Negative correlation** \_\_\_\_\_

**No correlation** \_\_\_\_\_

b. What kind of correlation is the following situation?

Number of gallons of gas in your car and the distance you can travel

Number of oranges you can eat and your height

Number of students going to a concert and the revenue generated

c. If a scatter plot shows a negative correlation, which line of best fit could represent the scatter plot?

A.  $y = x - 5$     B.  $y = -1000x + 5000$     C.  $y = 100x - 7$     D.  $y = 5$

12. What is the equation of a line that has a slope of  $\frac{3}{5}$  and a y-intercept of 2?

A.  $5y - 3x = 10$     B.  $5x - 3y = 10$     C.  $5y + 3x = 10$     D.  $5x + 3y = 10$

13. Triangle ABC has vertices (1,1), (3,5), and (5, 3). This triangle is dilated by a factor of 3. What are the images of the 3 vertices. Graph ABC and the image A'B'C'

14. The diagonal of a square computer screen is 50 inches. What is the perimeter of this TV?

\_\_\_\_\_

15. 100 students take a survey to see what kind of ice cream people in America like to eat.

Which of the following will most likely flaw the survey?

- A. Some students were not born in the United States
- B. The students were not young enough
- C. The survey may not include people who travel 50 miles to get ice cream
- D. Choose students from a variety of schools.

16. Which statement shows the similarity between the following 2 graphs?

$$4y = 2x + 0.5 \text{ and } 4y = 5x + \frac{1}{2}$$

- A. The y-intercepts are the same
- B. The graphs are identical
- C. The x-intercepts are the same
- D. The slopes are the same

17. Below are 3 equations

1)  $4x - 2x + 1 = -1 + 2 + 2x$

2)  $2x - 2 = 6 - 4 + 4x$

3)  $5 + 3x = 2 + 3x + 5$

Solve all equations and then say

Which equation has 1 solution? \_\_\_\_\_, 2 solutions? \_\_\_\_\_, infinitely many solutions? \_\_\_\_\_

18. Solve for x.

A tree is 8 feet tall and cast a shadow that is 6 feet. a. If your child's height is 4 feet, which equation can you use to find the length of his shadow?

A.  $8/5 = 6/x$     B.  $4/6 = x/8$     C.  $8/4 = 6/x$     D.  $x/4 = 8/6$

b. What is the length of the shadow? \_\_\_\_\_

19. Solve the following simultaneous equations.

$2x + 4y = 8$

$4x - 4y = 6$

a. by graphing

b. algebraically

20. The cup below is  $2/3$  full. How much water can the cup hold?

