

FOUNDATION PROGRAM

MATHEMATICS TEST

(VIII CLASS)

For

IIT-JEE/PMT

Name _____

Date: _____

Solve the following problems

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

- 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. 7×10^{13} B. 3.5×10^{13} C. 2×10^{13} D. 7×10^{12}

(b) 0.0004×4000 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. $\{4 \times \sqrt{5}, 2, \sqrt{100}, 0\}$

(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 π ?

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?

(c) What is the slope of the cost? what is the y-intercept?

(d) Using the **answers** for c, graph the cost on the coordinate system.

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.

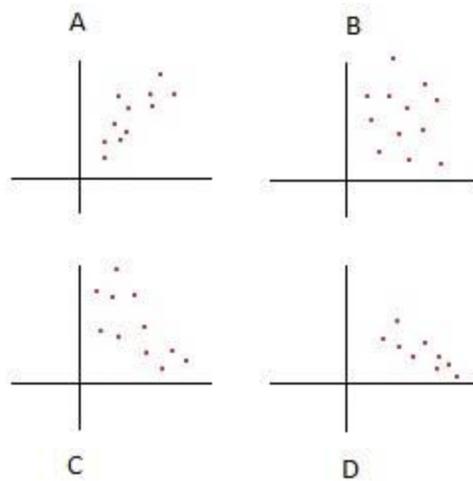
9. Celita has a garden shaped like a square. How does the area change if she triples the length of each side?

A. The area of the garden is tripled **B.** The area of the garden is nonupled **C.** halved
D. sextupled

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 delhi like to eat.

Which of the following will most likely flaw the survey?

- A. Some students were not born in the delhi
- 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?

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

- 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 _____, no solutions _____, infinitely many solutions _____

18. 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?(b) Which proportion can you use to solve this problem?

- 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.

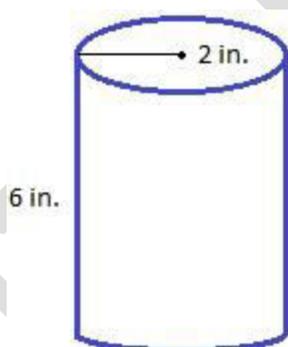
$$2x + 4y = 8$$

$$4x - 4y = 6$$

a. by graphing

b. algebraically

20. The cup below is $\frac{2}{3}$ full. How much water can the cup hold? _____



Note: A score of 16 or more on this 8th grade math test is a good indication that most skills taught in 8th grade were mastered

If you struggled a lot on this 8th grade math test, get someone who is expert in mathematics to help you.

BEST OF LUCK