

π -Rates Fall 2024 Club Competition

**Presented by the Board of the
 π -Rates Math Club**

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Problem 01

Evaluate

$$2^2 \times 2^3$$

Problem 02

How many “H”s are there below?

H H H H H

H H H H

H H H

Problem 03

What is the
value of c ?



Problem 04

What is the value of y when $x = 5$?

$$7y = 5x - 4$$

Problem 05

If Mr. Lowery runs at a constant rate of 20 miles per hour, how many miles will he travel in 5.5 hours?

Problem 06

Solve for the x-intercept of

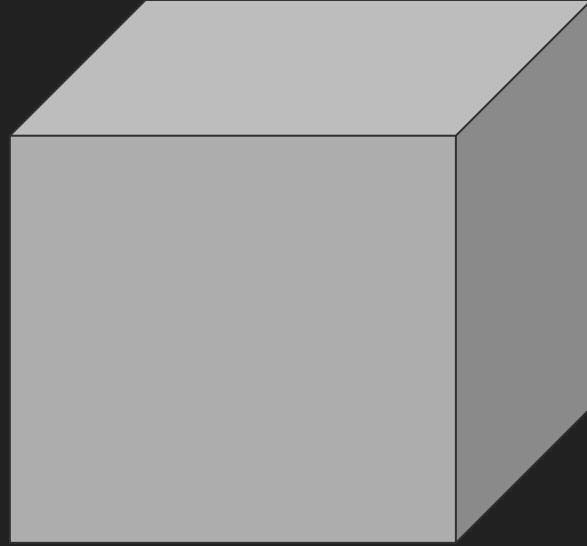
$$f(x) = 6(x+7)^2$$

Problem 07

Simplify $(\sqrt{64})^2$

Problem 08

What is the
surface area
of the cube?



6

Problem 09

Write the following fraction as
a mixed number:

$$\frac{39}{4}$$

Problem 10

Points A, B, and C are on a line. You are at point A. Point B is 2.234 cm to your right. Point C is 3 cm to your left. Point D is 7.5 cm to your right. How far is point D from point C?

Problem 11

What is $2^2 \times 1^1 \times 2^2$?

Problem 12

Evaluate

$$(2 - 3) \times 723$$

Problem 13

An induction stove costs \$65. How much do I have to pay if I want to buy 8 stoves (ignoring tax)?

Problem 14

In the following function, as x approaches infinity, what does $f(x)$ approach?

$$f(x) = 7x + 6$$

Problem 15

What is $1 + 2 + 4 + 8 + 16 + 32$?

Problem 16

If India has 154,965 post offices and the United States has 34,223 post offices, how many more post offices does India have compared to the United States?

Problem 17

What is $1 \times 1 \times 11 \times 1 \times 1 \times 11 \times 1 \times 1$

Problem 18

The Olympic flag was designed in 1913.
How many years has it been since it
was designed (in 2024 now)?

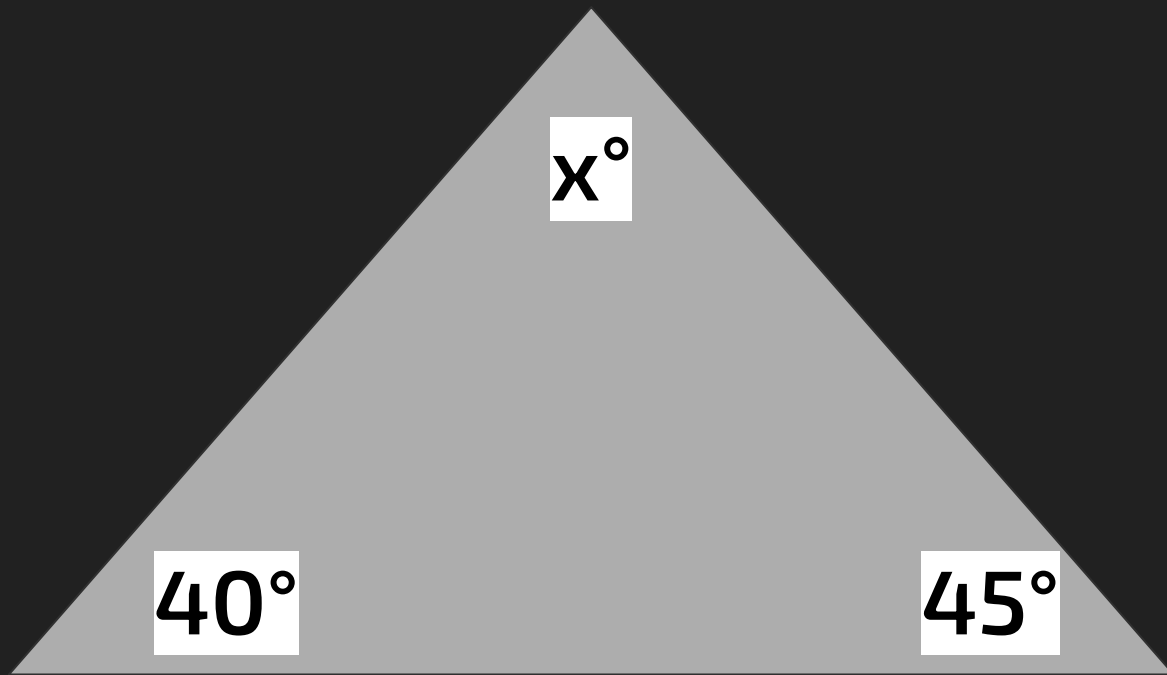
Problem 19

The ratio of $a:z$ is $3:2$

If z is 90, what is a ?

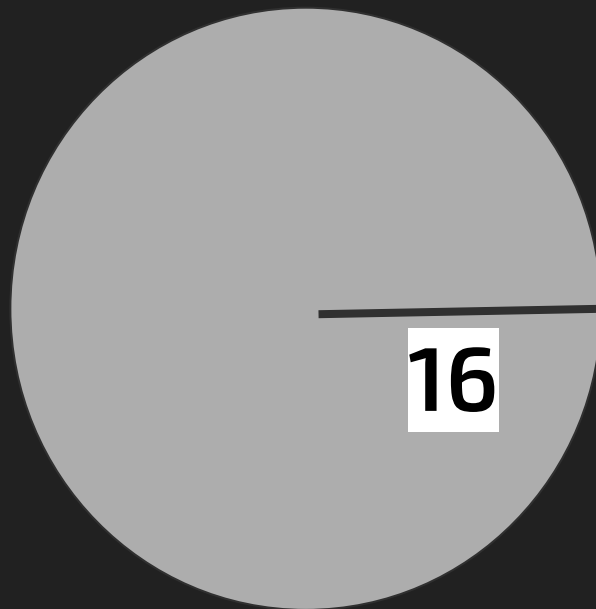
Problem 20

What is the
value of x ?



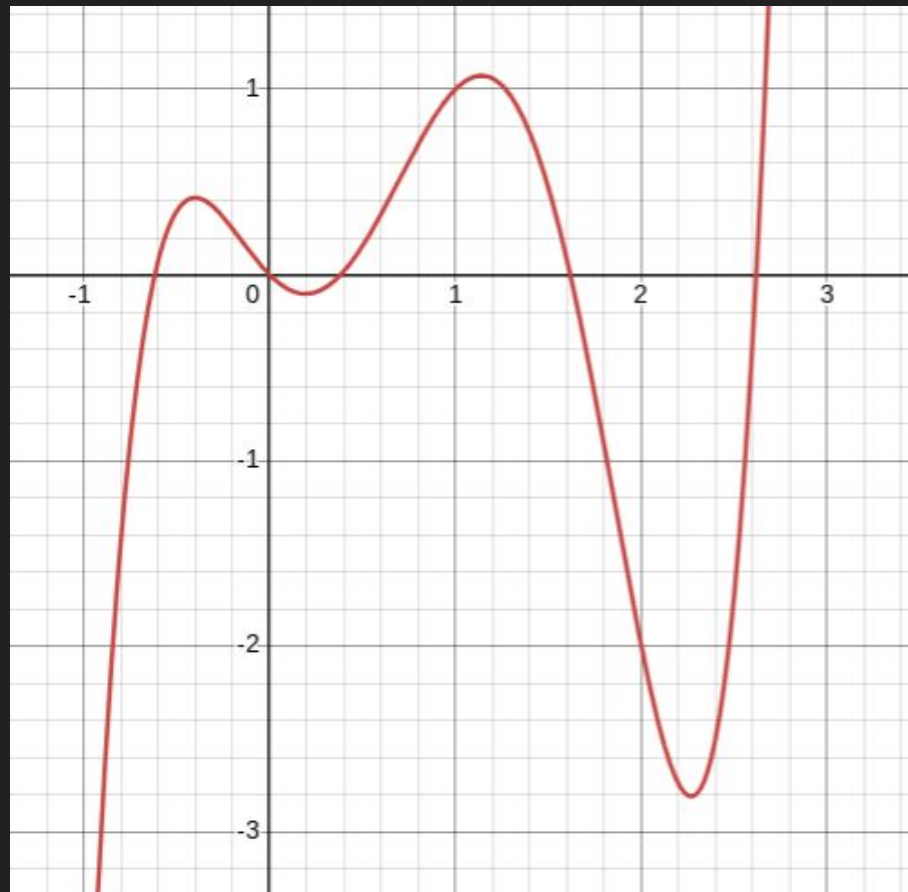
Problem 21

What is the area
of the circle (in
terms of π)?



Problem 22

How many times
does the following
equation intercept
the x-axis?



Problem 23

Given that $7(219a + 4b) = 5$,
what is the value of
 $21(219a + 4b)$?

Problem 24

If I have a rectangle with dimensions of 8 meters by 7 meters, what is the perimeter of the rectangle?

Problem 25

Evaluate

$$4^3 + (1 - 2) \times 3 + 10$$

Problem 26

Find the (x,y) pair solution to the following systems of equations:

$$y = 2x + 3$$

$$y = -7x + 12$$

Problem 27

What is the y-intercept of the following function?

$$f(x) = 3^x + 6$$

Problem 28

Art guy can produce 321 pieces of artwork per hour. How many pieces of artwork does he produce after a 24 hour session?

Problem 29

Evaluate

$$|7 \cdot 8 \cdot -9| + 10$$

Problem 30

What is the
measure of
unknown angle?



Problem 31

Find the mean of the data set:

$$6 + 8 + 13 + 17 + 21$$

Problem 32

Find the median of the data set:

2, 5, 7, 40, 23, 28, 5