π-Rates Fall 2023 Competition

Presented by the Board of the π-Rates Math Club

THIS SLIDE INTENTIONALLY LEFT BLANK

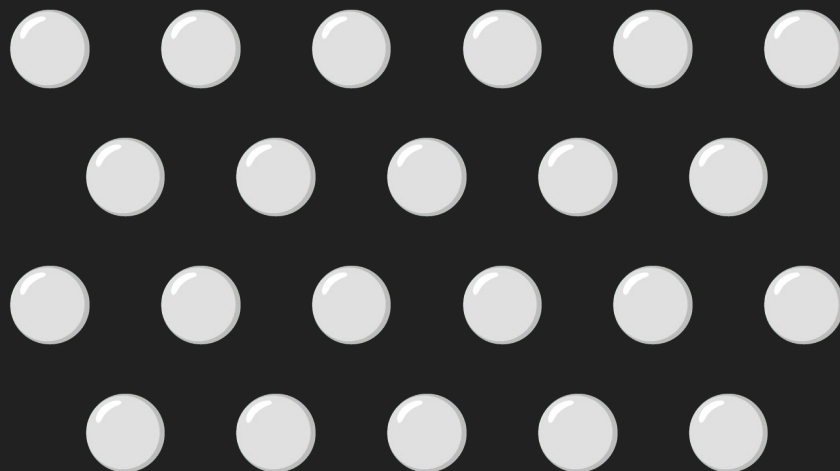Evaluate

$3^2 \times 3^3$

Problem 02

How many dots are there?

Problem 03

What is the value of c?

c

4

3

Pythagorean Theorem: a² + b² = c²

What is the value y when x = 3?

$$4y = 20x - 4$$

Luke and Alex are running at the same speed. Luke runs at a constant speed of 15 miles per hour. What speed does Alex run at in miles per minute?

Using the function $f(x) = x^2 - x - 6$, solve for the negative x-intercept.

I am thinking of a number. If you multiply this number by 11 and then add 15 to it, you get 136. What number am I thinking of?

Problem 08
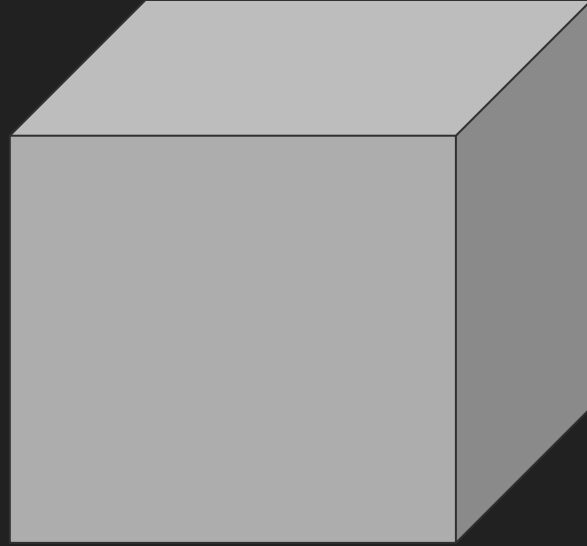
Write the following fraction as a mixed number:

$$\frac{67}{9}$$

Problem 09

What is the
surface area
of the cube?

5

There are 26 letters in the English alphabet. How many different combinations of 2 letters can I make (repetition is allowed, so AA, AB, and BA each count as a combination)?

Problem 11

Given that x is an odd whole number and is restrained by the following inequality, determine the value of x

$$2x + 3 > 32$$

$$x - 37 < -21$$

Problem 12

A desk costs $19.99. How much do I have to pay if I want to buy 7 desks (ignoring tax)?

Problem 13

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

$$f(x) = -x^3 + 2x^2 - 3$$

Evaluate

(99 – 99) x 30

Problem 15

I have 30 sets of pencils, with 4 pencils in each. There are 37 red pencils and 47 blue pencils and the remaining are green. How many green pencils do I have?

Problem 16

Solve for x

$$3x - 3 = 9$$

There are 52 cards in a deck of playing cards. If I have 7 decks of cards and I divide them evenly between 5 people, how many cards will be left over (cards cannot be split into fractions)?

Based on the data in the table, what will be the value of f(x) when x is 9?

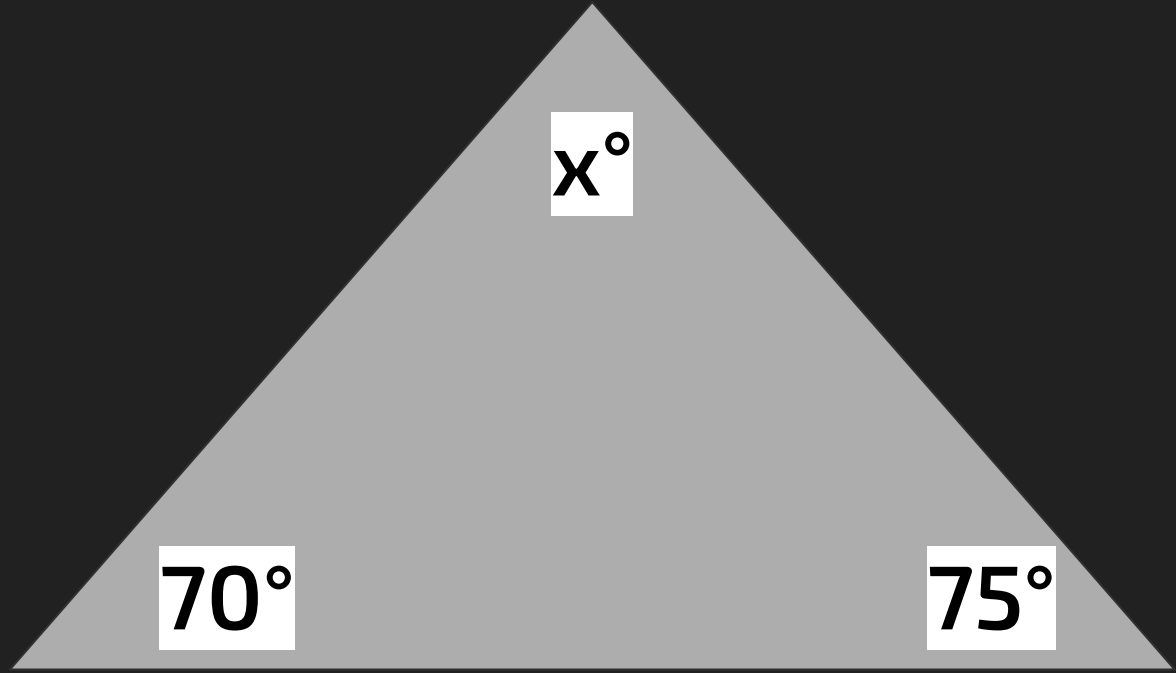| x	3	5	6	7
f(x)	13	1	-5	-11

Problem 19

Evaluate

13579 − 24680
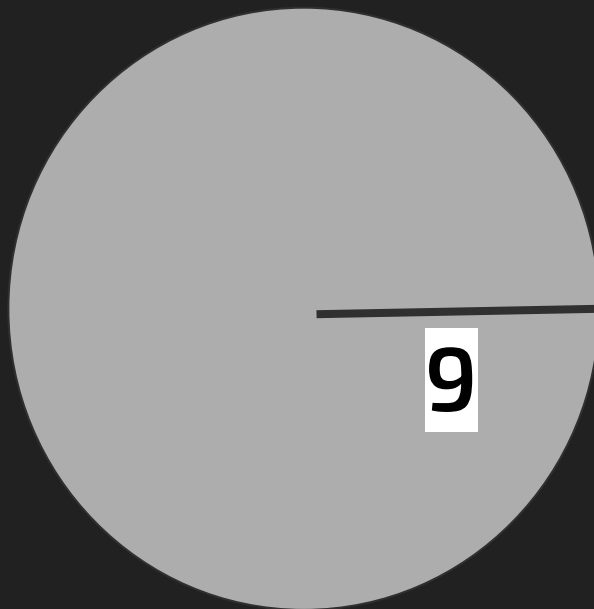
Problem 20

What is the
value of x?

X°

70°   75°

Interior angles of a triangle add to 180°
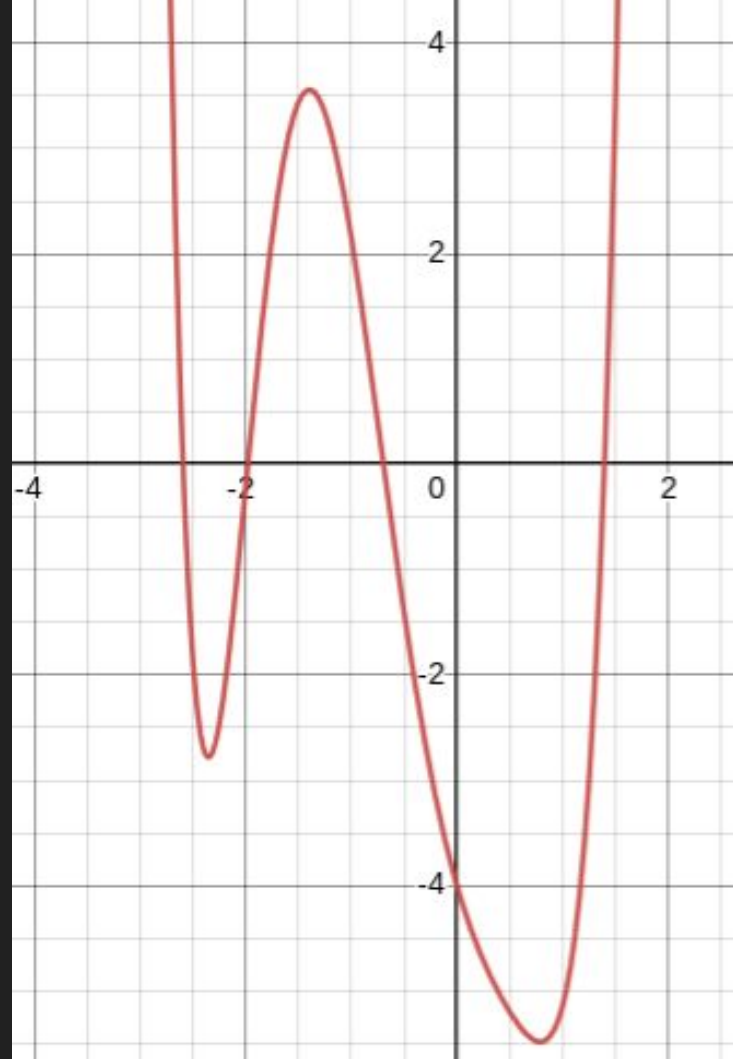
What is the area of the circle (in terms of π)?

9

Problem 22

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

Given that 3(a + 2b) = 7, what is the value of 12(a + 2b)?

Evaluate

1 + 2 x 3 + 1

In Mr. L's algebra class, 85% of the students have an A. If there are 60 students in the class, how many students have an A?

Evaluate

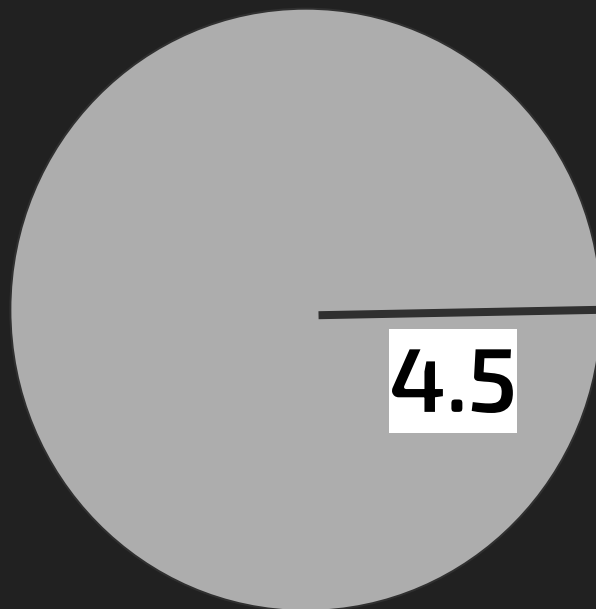## 6x + 7 – 2(3x –3)

Problem 27

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

4.5

Evaluate

3.5 x (1 + 2 + 3 + 4 + 5)

Problem 29

Evaluate

$$c + a + 3 - c - a + 3$$

Problem 30

I own 50 acres of land. Half of the land is worth $5,000 per acre and half is worth $10,000 per acre. What is the total value of my land, <u>in thousands</u>?