

Day 1- March 24 (Expressions/Operations on Real Numbers)

Day 1

Expression /Operations on Real Numbers

1. A square building lot for a house has an area of 9974 square feet. Which is closest to the length of one of the sides of the lot?

- A. 99 feet
- B. 100 feet
- C. 2493 feet
- D. 2494 feet

2. Which answer choice is closest to the value of the following expression?

$$\sqrt{6} + \sqrt{14}$$

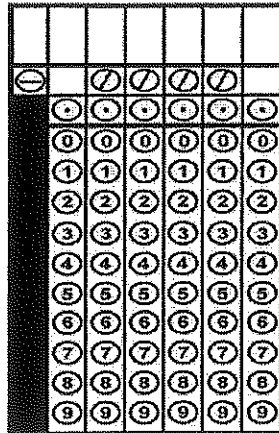
- A. $\sqrt{20}$
- B. 5
- C. 6
- D. 10

3. A department store is having a going-out-of-business sale. Each day, they reduce the price of every item in the store by 10% of the previous day's price until every item is sold. A jacket in the store is originally priced at \$110. On Day 1 of the sale, the price of the jacket is \$100. Assuming the jacket has not sold, what is the price of the jacket on the fourth day of the sale?

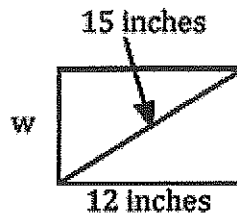
DAY	1	2	3	4
COST	\$100			???

- A. \$60.00
- B. \$65.61
- C. \$70.00
- D. \$72.92

4. The diameter of the Earth is 1.3×10^4 kilometers. The diameter of Jupiter is 1.43×10^5 kilometers. In standard form, how many times larger is the diameter of Jupiter than Earth?



5. A rectangular computer monitor has a diagonal measurement of 15 inches. If the length of the monitor is 12 inches, what is the width?



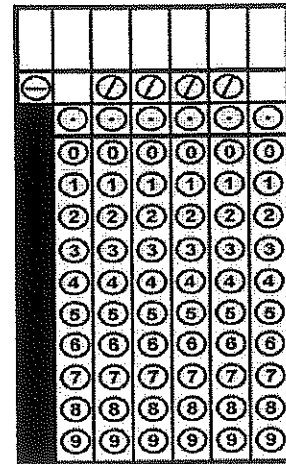
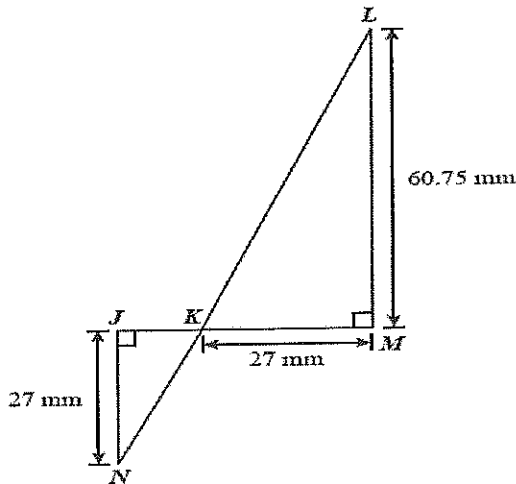
- A. 17.5 inches
- B. 10 inches
- C. 2 inches
- D. 9 inches

Day 2-March 25 (Finding Distance using Similar Triangles)

Day 2

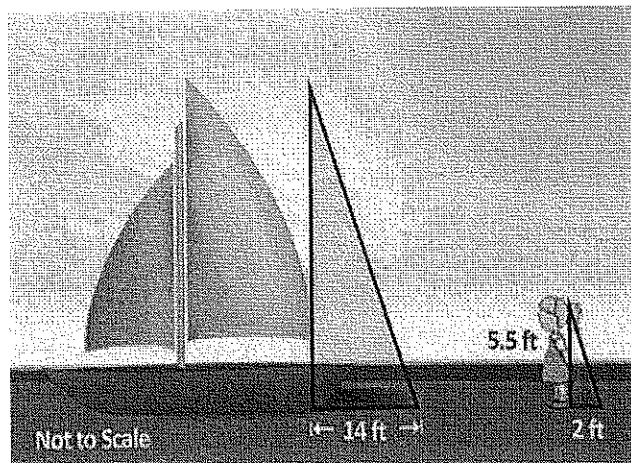
Finding Distance using Similar Triangles

1. In the figure below, $\triangle JKN$ and $\triangle MKL$ are similar triangles.



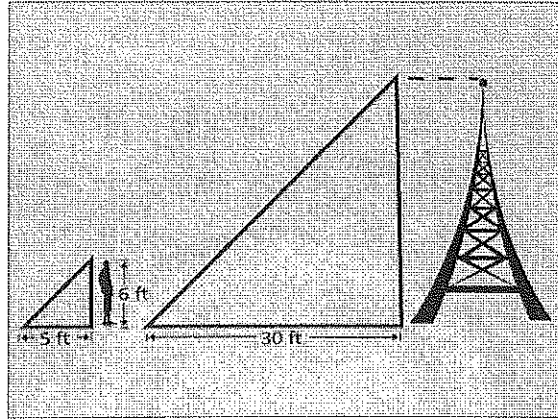
What is the length of JM , in millimeters?

2. Tasha saw a gorgeous sailboat while walking along the pier. She thinks it is the tallest sailboat she has ever seen. The shadow cast by the boat was 14 ft long, while Tasha's shadow was only 2 ft long. If Tasha is 5.5 ft tall, how tall was the sailboat, in feet?



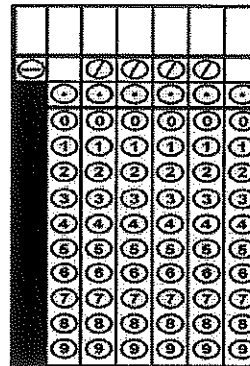
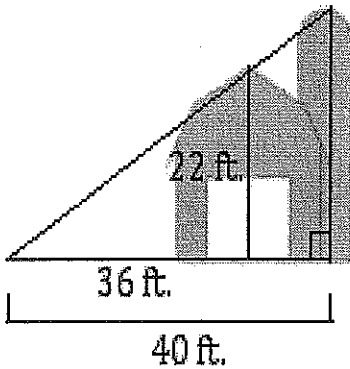
- A. 17.5
- B. 25
- C. 28
- D. 38.5

3. Jerome is fascinated with the radio tower across the street from his school and wants to know its height. Jerome determines that the radio tower casts a shadow of 30 feet, while he casts a shadow of only 5 feet. If Jerome is 6 feet tall, what is the height of the radio tower, in feet?

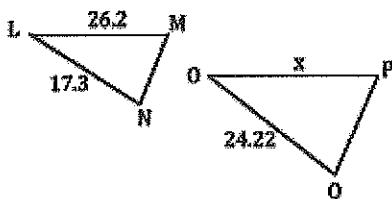


- A. 20
- B. 25
- C. 31
- D. 36

4. At 3:30 in the afternoon, a barn that is 22 feet high casts a 36-foot shadow. At the same time of day, the silo casts a 40-foot shadow. How high is the silo to the nearest tenth of a foot?



5. A tree is 24 feet tall and casts an 8-foot shadow. At the same time how long is Raymond's shadow, if Raymond is 6 feet tall?



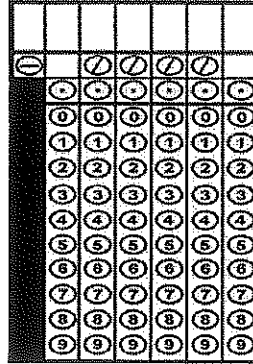
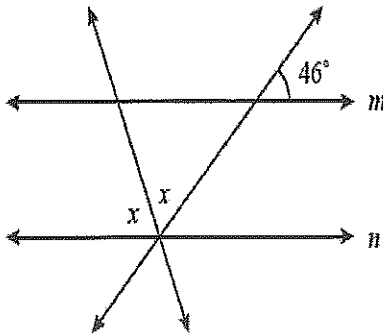
Answer _____

Day 3-March 26 (Classifying Angles & Angle Relationships)

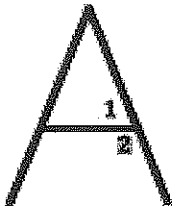
Day 3

Classifying Angles & Angle Relationships

1. In the figure below, lines m and n are parallel. Two transversals intersect on n , forming several angles, as shown on the diagram below. What is the measure of $\angle x$?

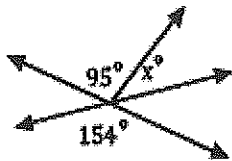


2. Allison draws a capital A on her paper. She determines the measure of $\angle 1$ is 80° . What must be the measure of $\angle 2$?



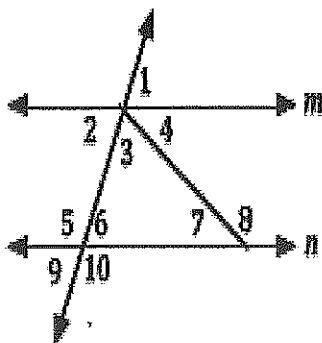
- A. 80°
- B. 90°
- C. 100°
- D. 180°

3. What is the value of x in the figure?



- F. 59°
- G. 85°
- H. 35°
- I. 95°

4. The line m is parallel to line n . What is the relationship between $\angle 1$ and $\angle 9$ classified?



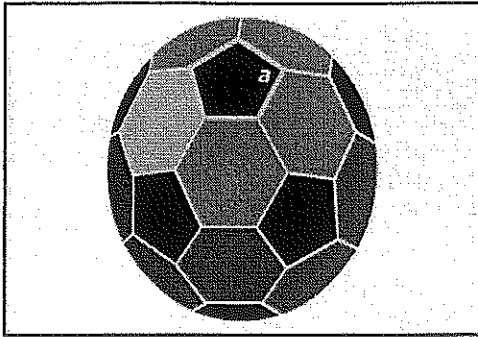
- A. corresponding angles
- B. vertical angles
- C. alternate exterior angles
- D. alternate exterior angles

Day 4-March 27 (Sum of Interior Angle of Polygons)

Day 4

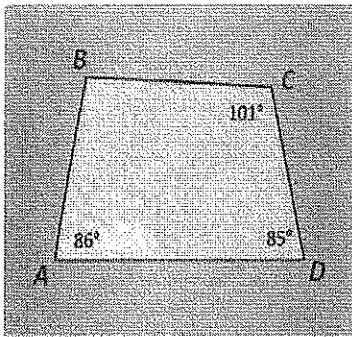
Sum of Interior Angle of Polygons

1. A truncated icosahedron, more commonly known as a Buckyball, is the three-dimensional arrangement of a molecule made of up 60 carbon atoms. It consists of 20 regular hexagons and 12 regular pentagons. In degrees, what is the measure of $\angle a$?



Answer _____

2. Salena is building a patio by laying quadrilateral tiles. The measures of three of the interior angles of a tile are shown below. What is the measure of $\angle B$?



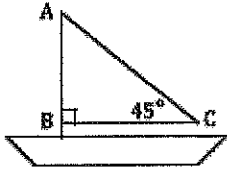
- A. 79
- B. 85
- C. 88
- D. 94

3. The $\triangle FUN$ is a right angle triangle. What is the value of "X"?



Answer _____

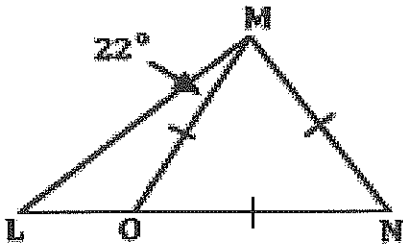
4. The sail of a boat is in the shape of a triangle. What is the measure of $\angle A$?



What is the measure of $\angle A$?

- A. 45°
- B. 90°
- C. 55°
- D. 35°

5. Use the triangle below.



What is the measure of $\angle MNO$?

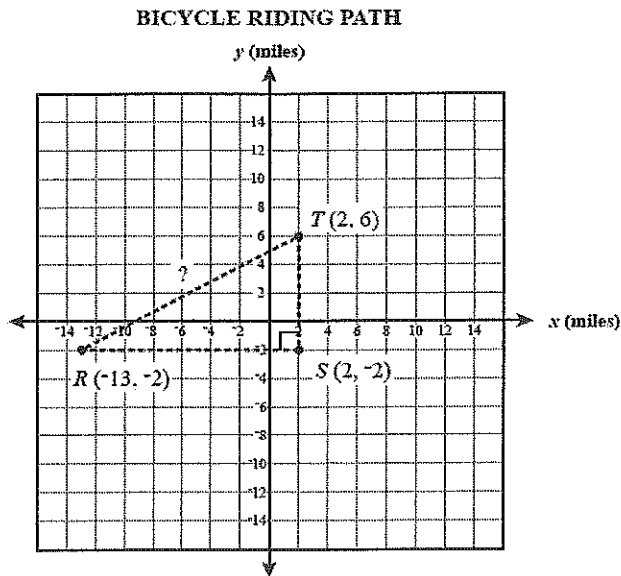
- A. 70°
- B. 65°
- C. 60°
- D. 55°

Day 5- March 28 (Finding Distance on the Coordinate Plane)

Day 5

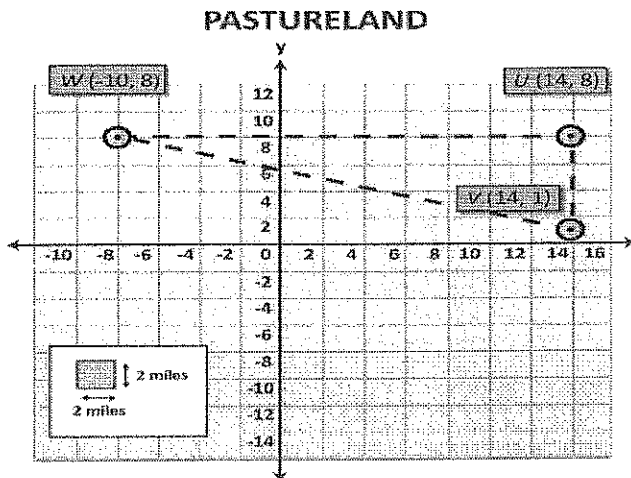
Finding Distance on the Coordinate Plane

1. On the coordinate plane below, $\triangle RST$ shows the path bicycle riders will follow on one of their weekly rides.



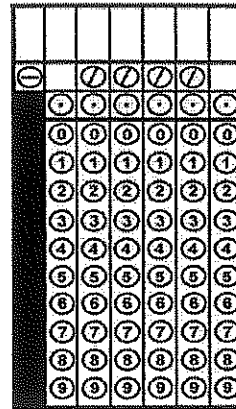
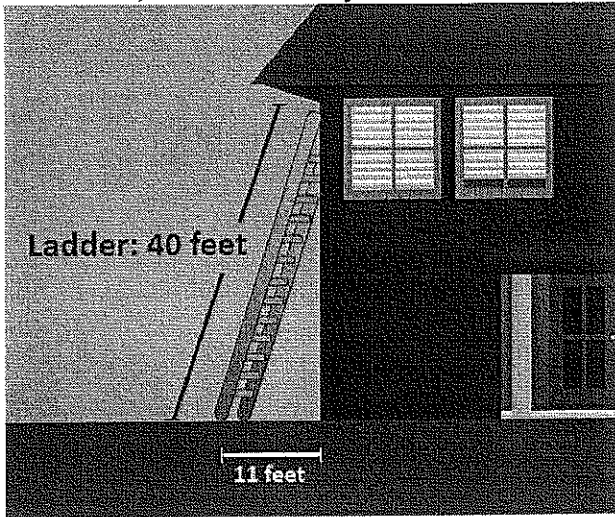
What is the total distance from point R to S to T and back to point R ?

- A. 17 miles
 - B. 23 miles
 - C. 32 miles
 - D. 40 miles
2. On the coordinate plane below, Stewart mapped out an area to be used for pastureland, represented by $\triangle UVW$. He needs to build a fence to contain animals within the pastureland. How many miles of fencing will Stewart need in order to build a fence from point U to point V , point V to point W , and then back to point U ?

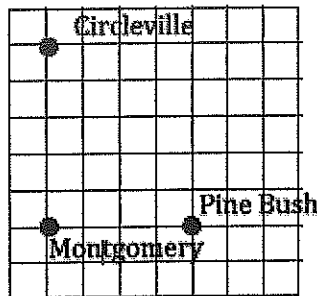


- A. 19
- B. 25
- C. 56
- D. 62

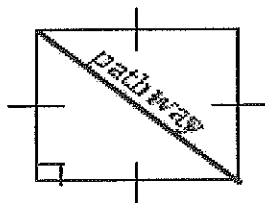
3. The Meridian Fire Department has a 40-foot extension ladder. Safety standards dictate that the base of a 40-foot ladder should be placed 11 feet from a vertical wall. How far above the ground will the top of the ladder be on the wall, in feet? Round your answer to the nearest hundredth



4. What is the distance between Circleville and Pine Bush to the nearest tenth of a mile, if each box is 1 square mile?



- A. 6.0 miles
 B. 6.4 miles
 C. 7.0 miles
 D. 6.3 miles
5. Melissa wants a brick pathway built diagonally across her garden. Her garden is in the shape of a square with a perimeter of 60 yards. What will be the length of the pathway to the nearest yard?



- F. 85 yards
 G. 60 yards
 H. 58 yards
 I. 21 yards

Example Reference Sheet

Day 1

Square Roots

A square root of a number is one of its two equal factors. A radical sign, $\sqrt{\quad}$, is used to indicate a positive square root. Every positive number has both a negative and positive square root.

Finding each square root

- 1 $\sqrt{1}$ Find the positive square root of 1; $1^2 = 1$.
- 2 $-\sqrt{16}$ Find the negative square root of 16; $(-4)^2 = 16$.
- 3 $\pm\sqrt{0.25}$ Find both square roots of 0.25; $0.5^2 = 0.25$.
- 4 $\sqrt{-49}$ There is no real square root because no number times itself is equal to -49 .

Solve $a^2 = \frac{4}{9}$. Check your solution(s).

$$a^2 = \frac{4}{9} \quad \text{Write the equation.}$$

$$a = \pm\sqrt{\frac{4}{9}} \quad \text{Definition of square root}$$

$$a = \frac{2}{3} \text{ or } -\frac{2}{3} \quad \text{Check } \frac{2}{3} \cdot \frac{2}{3} = \frac{4}{9} \text{ and } \left(-\frac{2}{3}\right)\left(-\frac{2}{3}\right) = \frac{4}{9}$$

The equation has two solutions, $\frac{2}{3}$ and $-\frac{2}{3}$.

Scientific Notation

A number in scientific notation is written as the product of a factor that is at least one but less than ten and a power of ten.

Write 8.65×10^7 in standard form.

$$8.65 \times 10^7 = 8.65 \times 10,000,000 \\ = \underline{86,500,000}$$

$10^7 = 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10$ or 10,000,000
The decimal point moves 7 places to the right.

Write 9.2×10^{-3} in standard form.

$$9.2 \times 10^{-3} = 9.2 \times 0.001 \\ = \underline{0.0092}$$

The decimal point moves 3 places to the left.

Write 76,250 in scientific notation.

$$\underline{76,250} = 7.625 \times 10,000 \\ = 7.625 \times 10^4$$

The decimal point moves 4 places.
Since 76,250 is > 1 , the exponent is positive.

Write 0.00157 in scientific notation.

$$\underline{0.00157} = 1.57 \times 0.001 \\ = 1.57 \times 10^{-3}$$

The decimal point moves 3 places.
Since 0.00157 is < 1 , the exponent is negative.

Day 1 continues

Discount is the amount by which a regular price is reduced.

Find the Sale Price

SPORTS At Sports You Play, a skateboard that costs \$60 is on sale for 20% off. What is the sale price of the skateboard?

Step 1 Find the amount of the discount.

Let d represent the total discount.

$$\underbrace{\text{part}} = \underbrace{\text{percent}} \cdot \underbrace{\text{whole}}$$

$$d = 0.2 \cdot 60$$

Write the percent equation.

$$d = 12$$

Multiply.

Step 2 Subtract the discount from the original price to find the sale price.

$$\$60 - \$12 = \$48.$$

Sales tax is an additional amount of money charged on certain goods and services.

CLOTHES A sweater costs \$30 and the sales tax is 7%. What is the total cost of the sweater?

Step 1 Find the amount of the sales tax.

Let t represent the sales tax.

$$\text{part} = \text{percent} \cdot \text{whole}$$

$$t = 0.07 \cdot 30$$

Write the percent equation.

$$t = 2.10$$

Multiply.

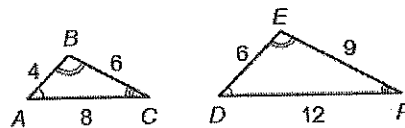
Step 2 Add the sales tax to the original price to find the total price.

$$\$30 + \$2.10 = \$32.10.$$

Day 2 - Similar Polygons

Two polygons are similar if they have the same shape. If the polygons are similar, then their corresponding angles are congruent and the measures of their corresponding sides are proportional. Use the symbol \sim for similarity.

Determine whether $\triangle ABC$ is similar to $\triangle DEF$. Explain.



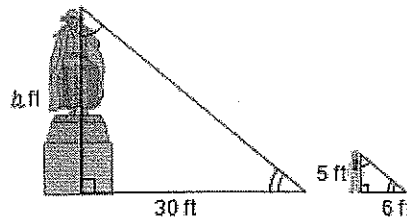
$$\angle A \cong \angle D, \angle B \cong \angle E, \angle C \cong \angle F,$$

$$\frac{AB}{DE} = \frac{4}{6} \text{ or } \frac{2}{3}, \frac{BC}{EF} = \frac{6}{9} \text{ or } \frac{2}{3}, \frac{AC}{DF} = \frac{8}{12} \text{ or } \frac{2}{3}$$

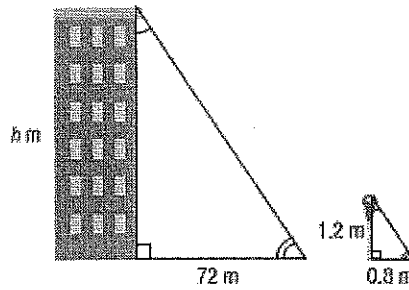
The corresponding angles are congruent, and the corresponding sides are proportional.

So, $\triangle ABC$ is similar to $\triangle DEF$, or $\triangle ABC \sim \triangle DEF$.

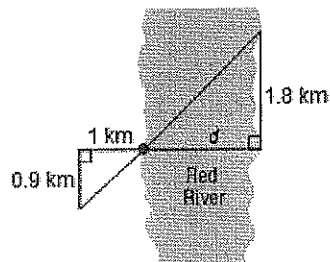
1. **MONUMENTS** A statue casts a shadow 30 feet long. At the same time, a person who is 5 feet tall casts a shadow that is 6 feet long. How tall is the statue?



2. **BUILDINGS** A building casts a shadow 72 meters long. At the same time, a parking meter that is 1.2 meters tall casts a shadow that is 0.8 meter long. How tall is the building?



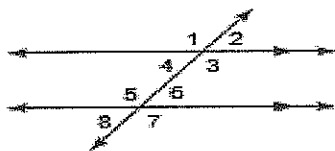
3. **SURVEYING** The two triangles shown in the figure are similar. Find the distance d across Red River.



Day 3- Lines

- **Perpendicular lines** are lines that intersect at right angles.
- **Parallel lines** are two lines in a plane that never intersect or cross.
- A line that intersects two or more other lines is called a **transversal**.
- If the two lines cut by a transversal are parallel, then these are special pairs of angles are congruent: **alternate interior angles, alternate exterior angles, and corresponding angles.**

Classify $\angle 4$ and $\angle 8$ as *alternate interior*, *alternate exterior*, or *corresponding*.



$\angle 4$ and $\angle 8$ are in the same position in relation to the transversal on the two lines. They are corresponding angles.

Refer to the figure in Example 1. Find $m\angle 2$ if $m\angle 8 = 58^\circ$.

Since $\angle 2$ and $\angle 8$ are alternate exterior angles, $m\angle 2 = 58^\circ$

Day 4 - Polygons and Angles

- A **polygon** is a simple, closed figure formed by three or more line segments. The segments intersect only at their endpoints.
- Polygons can be classified by the number of sides they have.
- The sum of the measures of the interior angles of a polygon is $(n - 2)180$, where n represents the number of sides.

Determine whether the figure is a polygon. If it is, classify the polygon. If it is not a polygon, explain why.



The figure has 8 sides that only intersect at their endpoints.
It is an octagon.

The defense department of the United States has its headquarters in a building called the Pentagon because it is shaped like a regular pentagon. Find the measure of an interior angle of a regular pentagon.

$$S = (n - 2)180$$

$$S = (5 - 2)180$$

$$S = (3)180$$

$$S = 540$$

$$540 \div 5 = 108$$

Write an equation.

Replace n with 5. Subtract.

Multiply.

The sum of the interior angles is 540° .

Divide by the number of interior angles to find the measure of one angle.

The measure of one interior angle of a regular pentagon is 108° .

Day 5 - Distance on the Coordinate Plane

You can use the Pythagorean Theorem to find the distance between two points on the coordinate plane.

Graph the ordered pairs $(2, -3)$ and $(5, 4)$. Then find the distance c between the two points.

$$a^2 + b^2 = c^2$$

The Pythagorean Theorem

$$3^2 + 7^2 = c^2$$

Replace a with 3 and b with 7.

$$58 = c^2$$

$$3^2 + 7^2 = 9 + 49 = 58$$

$$\pm\sqrt{58} = \sqrt{c^2}$$

Definition of square root

$$\pm 7.6 \approx c$$

Use a calculator.

The points are about 7.6 units apart.

