

1

Which of these statements is the BEST conclusion for the following list of statements?

- $\angle A$ and $\angle B$ are acute angles of $\triangle ABC$.
- $\angle A$ and $\angle B$ are base and vertex angles respectively.
- $\triangle ABC$ is an equilateral triangle.

- A $\angle A \cong \angle B$
- B $\angle A > \angle B$
- C $m\angle A + m\angle B < 90^\circ$
- D $\angle A$ and $\angle B$ must be complementary.

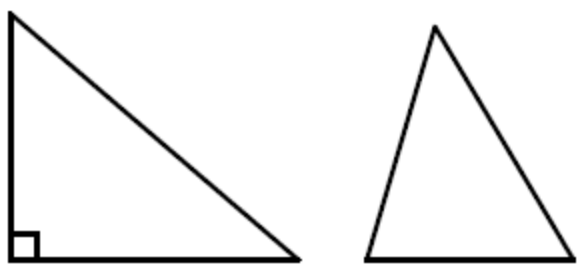
2.

In the xy -plane, if the lines $y = 6$ and $y = 2x + k$ intersect at the point $(1, 6)$, what is the value of k ?

- A 1
- B 3
- C 4
- D 6

3.

After reviewing the two diagrams below, Jessie came to the conclusion that every angle within a triangle must be less than or equal to 90 degrees.

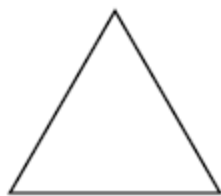


Which triangle below serves as a counterexample to Jessie's argument?

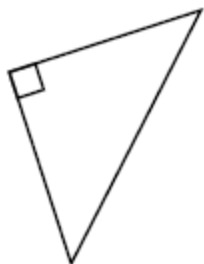
A



C



B

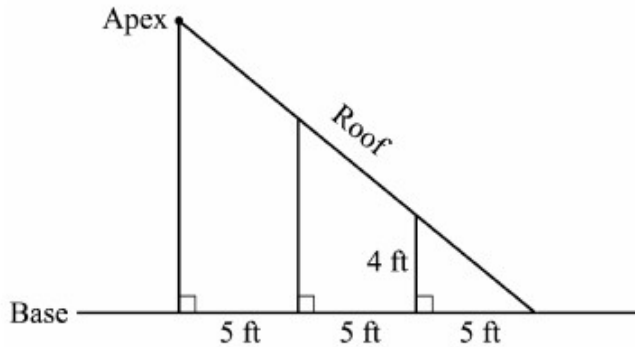


D



4.

The diagram below shows a part of a roof. The highest part of the roof is called the apex.



How many feet above the base is the apex of the roof?

- A 8
- B 9
- C 12
- D 20

5.

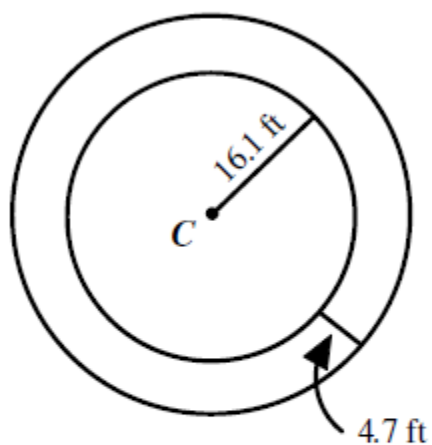
What is the converse of the following statement?

If Gerald goes swimming, then he will wear his red swimsuit.

- A If Gerald wears his red swimsuit, then he will go swimming.
- B If Gerald does not go swimming, then he will not wear his red swimsuit.
- C If Gerald does not wear his red swimsuit, then he will not go swimming.
- D If Gerald goes swimming, then he will wear his blue swimsuit.

6.

In the figure below, C is the center of both circles.



What is the circumference of the larger circle?

- A $32.2\pi \text{ ft}$
- B $20.8\pi \text{ ft}$
- C $41.6\pi \text{ ft}$
- D $9.4\pi \text{ ft}$

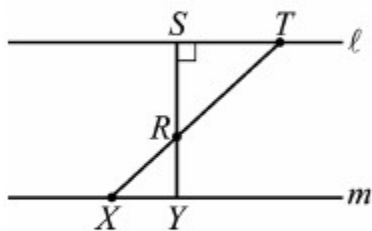
7.

What is the area of a square with sides of 4.3 meters?

- A $\sqrt{4.3} \text{ m}^2$
- B 8.6 m^2
- C 17.2 m^2
- D 18.49 m^2

8.

In the figure below, line ℓ is parallel to line m . If $RS = ST$, what is the measure of $\angle RXY$?



- A 30°
- B 45°
- C 60°
- D 90°

9.

Which statement about a parallelogram must be true?

- A All of its sides are the same length.
- B Its diagonals are the same length.
- C Its opposite angles have the same measure.
- D At least one angle is a right angle.

10.

The diameter of a large circular table is 7 feet. What is the circumference of the table in feet?

- A 4π
- B 7π
- C 14π
- D 21π

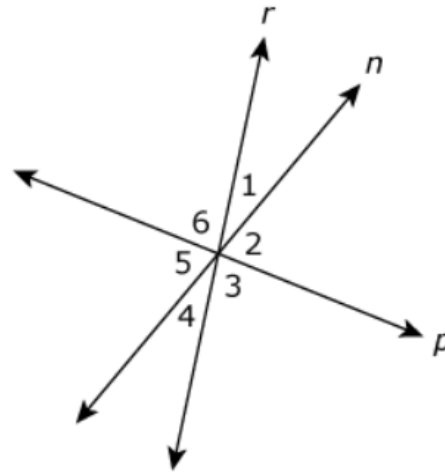
BONUS

11.

The figure shows lines r , n , and p intersecting to form angles numbered 1, 2, 3, 4, 5, and 6. All three lines lie in the same plane.

Based on the figure, which of the individual statements would provide enough information to conclude that line r is perpendicular to line p ?

- A. $m\angle 2 = 90^\circ$
- B. $m\angle 6 = 90^\circ$
- C. $m\angle 3 = m\angle 6$
- D. $m\angle 1 + m\angle 6 = 90^\circ$
- E. $m\angle 3 + m\angle 4 = 90^\circ$
- F. $m\angle 4 + m\angle 5 = 90^\circ$



Converse, Inverse, Contrapositive

Given an if-then statement "if p , then q ," we can create three related statements:

A conditional statement consists of two parts, a hypothesis in the "if" clause and a conclusion in the "then" clause. For instance, "If it rains, then they cancel school."

"It rains" is the hypothesis.

"They cancel school" is the conclusion.

To form the converse of the conditional statement, interchange the hypothesis and the conclusion.

The converse of "If it rains, then they cancel school" is "If they cancel school, then it rains."

To form the inverse of the conditional statement, take the negation of both the hypothesis and the conclusion.

The inverse of "If it rains, then they cancel school" is "If it does not rain, then they do not cancel school."

To form the contrapositive of the conditional statement, interchange the hypothesis and the conclusion of the inverse statement.

The contrapositive of "If it rains, then they cancel school" is "If they do not cancel school, then it does not rain."

Statement	If p , then q .
Converse	If q , then p .
Inverse	If not p , then not q .
Contrapositive	If not q , then not p .

Taken from:

https://www.varsitytutors.com/hotmath/hotmath_help/topics/converse-inverse-contrapositive