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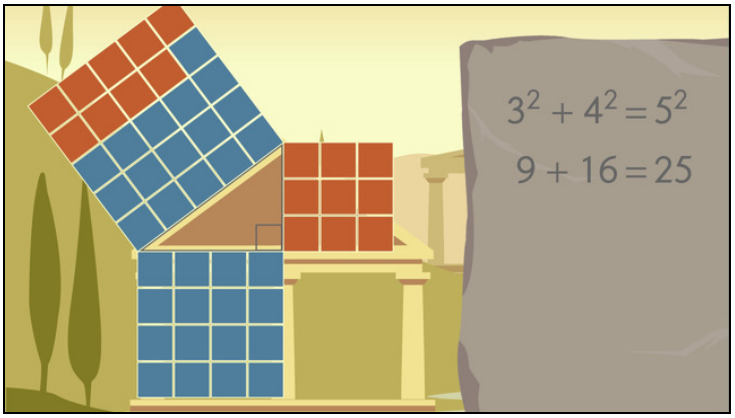
The Pythagorean Theorem



1. **Identify the right triangles.**
2. Define the Pythagorean Theorem.
3. Determine if the side lengths are a Pythagorean triple.
4. Find the areas.
5. Decide if the ladder fits.
6. Identify the Pythagorean triples.

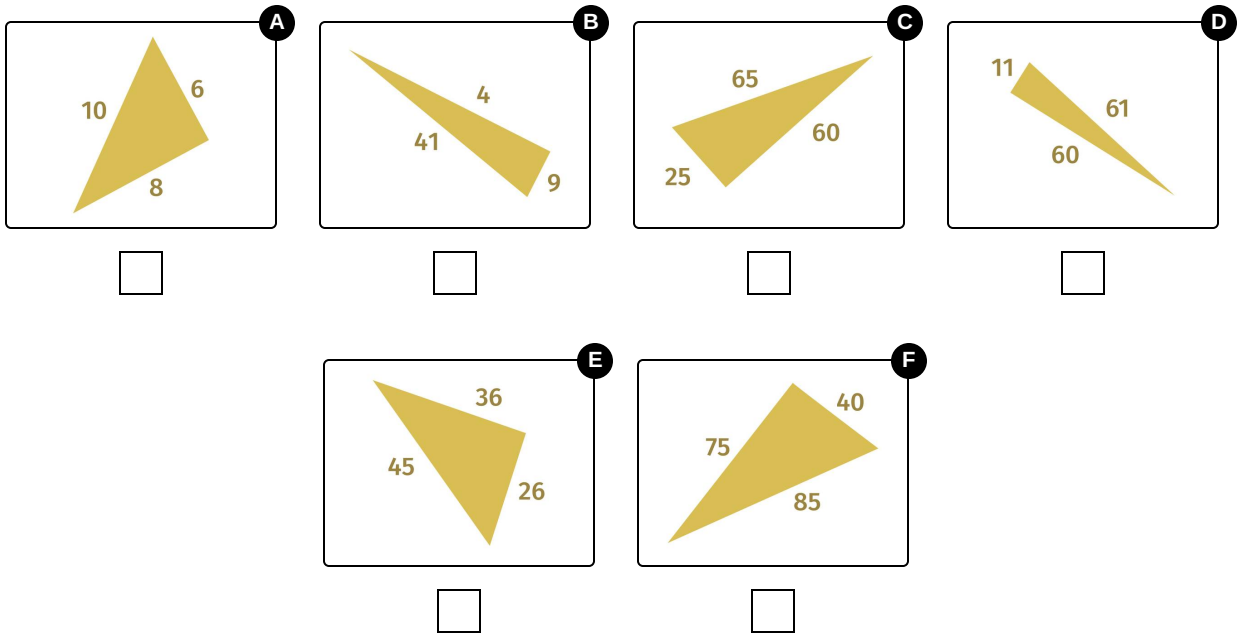
\+ with lots of tips, answer keys, and detailed answer explanations for all of the problems.

Identify the right triangles.

Select all correct answers.

Damo, the son of Pythagoras, wants to design a family crest for his family. Naturally, he wants to include a right triangle in the crest to highlight his mathematical family history.

Damo has chosen several triangles, and now needs to make sure that they are right triangles. Help Damo identify which triangles are right.



Hints for solving these problems

1 of 6

Identify the right triangles.

Hint #1

How can you determine if a triangle is a right triangle using the Pythagorean Theorem?

Hint #2

What equation can you use to check if a triangle is right, using it's side lengths, a, b, and c?

Hint #3

If a triangle's side lengths, a, b, and c, satisfy the equation $a^2 + b^2 = c^2$, then it is a right triangle.

Answers and detailed answer explanations for these problems

1 of 6

Identify the right triangles.

Answer key: A, B, C, D, F

We know that if a triangle is right, it's side lengths, a, b, and c, must satisfy the equation:

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

We are given the side lengths for each triangle. Let's use the equation to check if the triangles are right angle triangles.

The side lengths of the first triangle are 6, 8, and 10. We know that the value for c must be the longest side of the triangle.

So let's assign the values $a = 6$, $b = 8$, and $c = 10$.

Putting these values into the equation gives us:

$6^2 + 8^2 = 10^2$

$36 + 64 = 100$

$100 = 100$

Since the right hand side is equal to the left hand side, the values of a, b, and c for this triangle satisfy the equation. That means that this is a right triangle!

Similarly, for the other triangles, we arrive at:

$a = 9$, $b = 40$, $c = 41$:

$81 + 1600 = 1681$ ✓ The left and right sides of this equation are equal, so the triangle is right.

$a = 25$, $b = 60$, $c = 65$:

$625 + 3600 = 4225$ ✓ The left and right sides of this equation are equal, so the triangle is right.

$a = 11$, $b = 60$, $c = 61$:

$121 + 3600 = 3721$ ✓ The left and right sides of this equation are equal, so the triangle is right.

$a = 26$, $b = 36$, $c = 45$:

$676 + 1296 = 2025$ ✗ The left and right sides of this equation are not equal, so the triangle is not right.

$a = 40$, $b = 75$, $c = 85$:

$1600 + 5625 = 7225$ ✓ The left and right sides of this equation are equal, so the triangle is right.