

PAPILDOMA INFORMACIJA MOKYTOJUI

Task 1. Look at the pictures below and write the title for triangles:

Answers:

1. Equilateral Triangle
2. Isosceles Triangle
3. Scalene Triangle
4. Acute Triangle
5. Right Triangle
6. Obtuse Triangle
7. Right Isosceles Triangle

Task 2. Question 1.

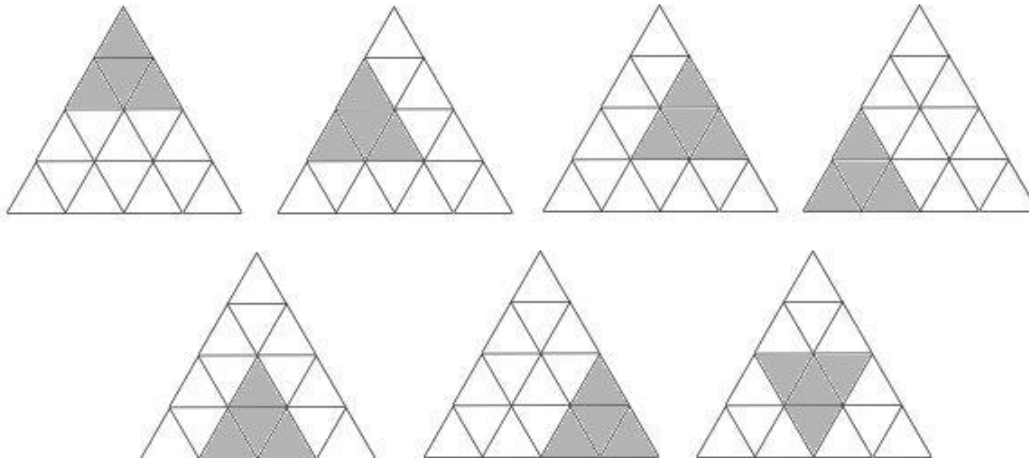
How many triangles similar to this equilateral triangle are there in the following diagram?

Answer: D.

For similar shapes resizing is allowed.

There are 16 triangles of the same size as the given triangle.

There are 7 triangles with lengths twice as much as those of the given triangle. i.e.



There are 3 triangles with lengths three times as much as those of the given triangle.

There is 1 triangle with lengths four times as much as those of the given triangle.

Therefore, there are 27 similar triangles altogether.

Question 2.

In the diagram: AB is parallel to ED, the points B, C and E lie on a straight line, and the points A, C and D also lie on a straight line. What is the value of **e** (the length of CD) ?

Answer: B.

Angle BCA = Angle DCE

And since AB and ED are parallel, Angle ABC = Angle DEC and Angle BAC = Angle EDC

So the two triangles have exactly the same angles and are therefore **similar triangles**.

Next, find the scale factor

$$= \frac{DE}{AB} = \frac{10.5}{7} = 1.5 \quad \text{Therefore } CD = 1.5 \times AC = 1.5 \times 11 = 16.5$$

Question 3.

BC is parallel to DE. What is the length of BC?

Answer: C.

Because BC is parallel to DE, pairs of corresponding angles are equal.

So triangles ABC and ADE have the same angles and are **similar triangles**.

So:

$$\frac{BC}{DE} = \frac{BA}{DA}$$

$$\frac{BC}{9.9} = \frac{5}{9}$$

$$BC = \frac{9.9 \times 5}{9} = 5.5$$

Question 4.

Triangles ABC and PQR are similar. What is the length of PQ?

Answer: B.

First find the scale factor:

Since AC = 12 and PR = 18, the scale factor is found by dividing PR by AC

$$\text{Scale factor} = \frac{18}{12} = 1.5$$

(That means that the second triangle is 1.5 times as large as the first)

Now use the same scale factor to find the length of PQ:

$$PQ = 1.5 \times 7 = 10.5$$

Question 5.

Triangles ABC and XYZ are similar. What is the length of XZ?

Answer: D.

First find the scale factor:

Since $BC = 10$ and $YZ = 20$, the scale factor is found by dividing YZ by BC

$$\text{Scale factor} = \frac{20}{10} = 2$$

Now use the same scale factor to find the length of XZ:

$$XZ = 2 \times 12 = 24$$

Task 3. Question 1.

Which triangle is NOT similar to the other three?

Answer: D.

Triangles A, B and C all have exactly the same angles: 40° , 57° and 83° (Remember the sum of the angles of a triangle is always 180°). Triangle D has some different angles: 40° , 67° and 73° . Triangle D, so, is not similar to the other three.

Question 2.

Triangles PQR and XYZ are similar.

What is the length of XZ?

Answer: C.

The lengths QR and YZ both face the angle marked with one arc.

So we can match 4 with 3, and so the ratio of sides in triangle PQR to sides in triangle XYZ is 4:3

The lengths XZ and PR both face the angle marked with two arcs.

Therefore the length of $XZ = \frac{3}{4} \times$ the length of $PR = \frac{3}{4} \times 7 = \frac{21}{4} = 5.25$

Question 3.

Triangles ABC and DEF are similar.

What is the length of EF?

Answer: C.

The lengths AC and DF both face the angle marked with two arcs.

So we can match 3.6 with 6, and so the ratio of sides in triangle ABC to sides in triangle DEF is $3.6:6 = 36:60 = 3:5$

The lengths BC and EF both face the angle marked with one arc.

Therefore the length of EF = $\frac{5}{3} \times$ the length of BC = $\frac{5}{3} \times 5 = \frac{25}{3} = 8.33$ (to 2 decimal places).

Question 4.

BC is parallel to DE. What is the length of CE?

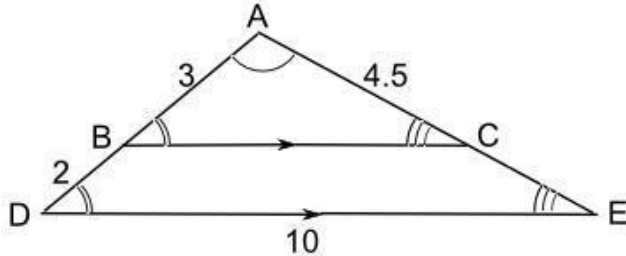
Answer: A.

Because BC is parallel to DE, we have pairs of corresponding angles equal:

Angle ABC = Angle ADE and Angle ACB = Angle AED

Also, Angle BAC = Angle DAE because it's the same angle.

Equal angles are marked in the following diagram:



So triangles ABC and ADE are SIMILAR.

And we can work out the length by comparing sides we know.

$$\text{So } \frac{AE}{AC} = \frac{AD}{AB}$$

$$\Rightarrow \frac{AE}{4.5} = \frac{(3+2)}{3}$$

$$\Rightarrow \frac{AE}{4.5} = \frac{5}{3}$$

$$\Rightarrow AE = 4.5 \times \left(\frac{5}{3}\right) = 7.5$$

$$\text{Therefore } CE = AE - AC = 7.5 - 4.5 = 3$$

Question 5.

The two triangles are similar, What is the length of DE?

Answer: B.

The triangle has been flipped and rotated as well as resized, but by comparing the relative lengths, we can identify equivalent sides:

AB and EF are the shortest sides, so are equivalent.

AC and DF are the middle-sized sides, so are equivalent.

BC and DE are the longest sides, so are equivalent.

We can work out the length of DE by comparing sides we know.

$$\text{So } \frac{DE}{BC} = \frac{EF}{AB}$$

