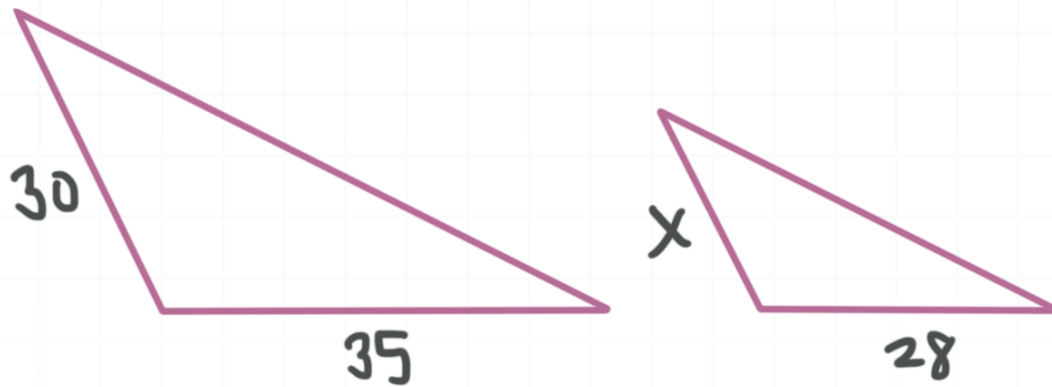**Topic**: Similar triangles

Question: The triangles in the figure are similar. What is the value of the variable?
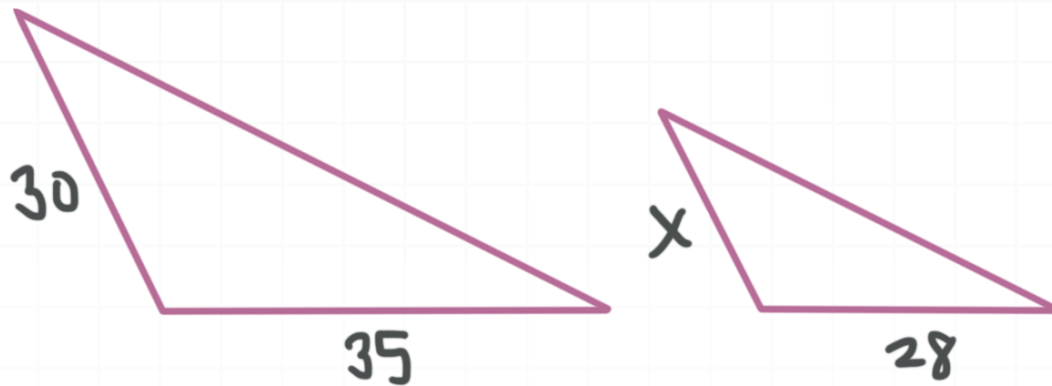

Answer choices:

A   24

B   25.5

C   26

D   37.5

Solution: A

In a pair of similar triangles, lengths of corresponding sides are proportional. In the figure, the sides of length x and 28 in the triangle on the right correspond to the sides of length 30 and 35, respectively, in the triangle on the left.

So we have the following proportion:

$$\frac{x}{30} = \frac{28}{35}$$
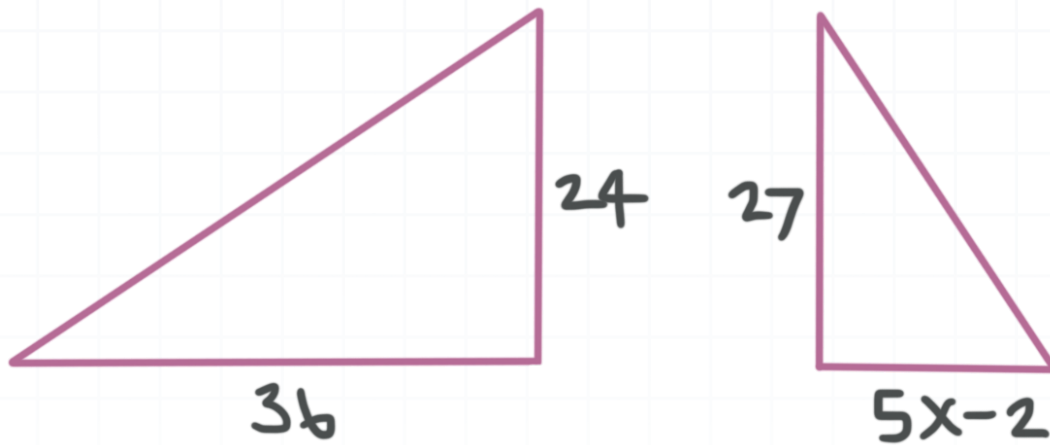
$$\frac{x}{30} = \frac{4}{5}$$

Cross multiply.

$$5x = 120$$

$$x = \frac{120}{5} = 24$$

Topic: Similar triangles

Question: The triangles in the figure are similar. What is the value of the variable?
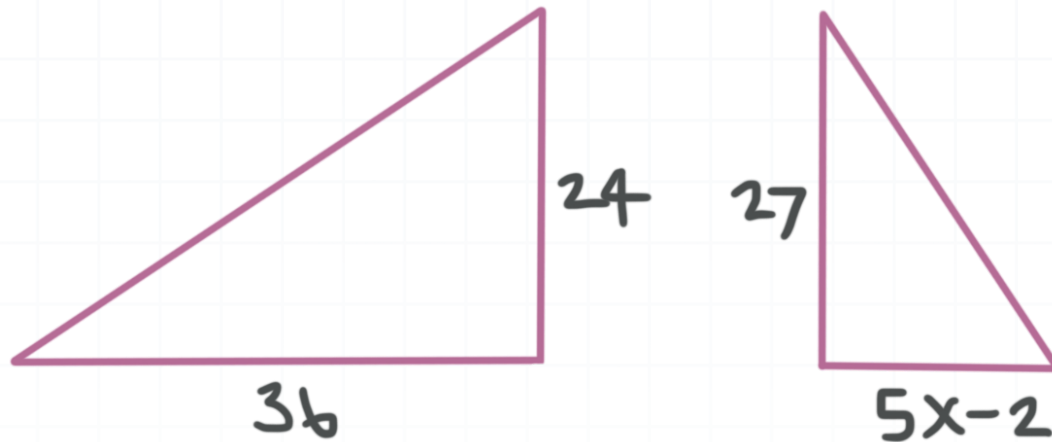

Answer choices:

A   16

B   11

C   7

D   4

Solution: D

In a pair of similar triangles, lengths of corresponding sides are proportional. In the figure, the sides of length $5x - 2$ and 27 in the triangle on the right correspond to the sides of length 24 and 36, respectively, in the triangle on the left.

So we have the following proportion:

$$\frac{5x - 2}{24} = \frac{27}{36}$$

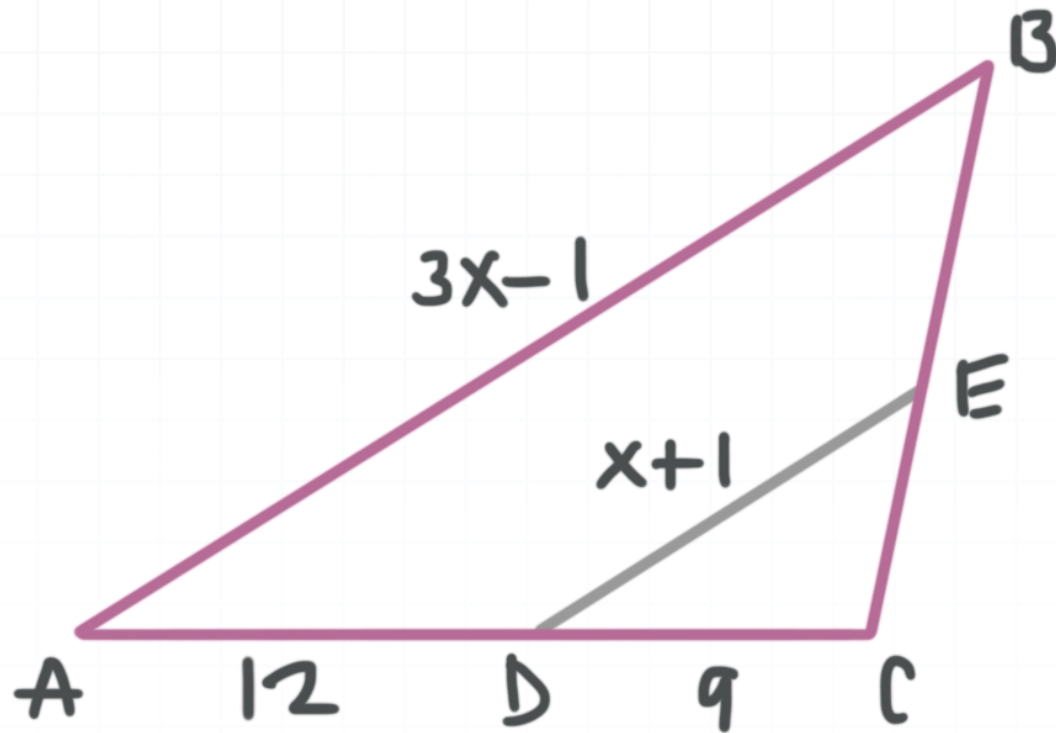$$\frac{5x - 2}{24} = \frac{3}{4}$$

Cross multiply.

$$20x - 8 = 72$$

$$20x = 80$$

$$x = \frac{80}{20} = 4$$

Topic: Similar triangles

Question: Given that $\triangle ABC \sim \triangle DEC$, what is the value of the variable?

Answer choices:

A   4

B   5

C   6

D   9

Solution: B

In a pair of similar triangles, lengths of corresponding sides are proportional.

side $\overline{DC}$ in $\triangle DEC$ corresponds to side $\overline{AC}$ in $\triangle ABC$

side $\overline{DE}$ in $\triangle DEC$ corresponds to side $\overline{AB}$ in $\triangle ABC$

So we have the following proportion:

$$\frac{9}{12+9} = \frac{x+1}{3x-1}$$

$$\frac{9}{21} = \frac{x+1}{3x-1}$$

Cross multiply.

$$9(3x-1) = 21(x+1)$$

$$27x - 9 = 21x + 21$$

$$6x - 9 = 21$$

$$6x = 30$$

$$x = 5$$