Triangles Ex 4.7 Q1

Answer :

We have,

$a = 3\,\text{cm}$

$b = 4\,\text{cm}$

$c = 6\,\text{cm}$

In order to prove that the triangle is a right angled triangle we have to prove that square of the larger side is equal to the sum of the squares of the other two sides.

Here, the larger side is $c = 6\,\text{cm}$.

Hence, we have to prove that $a^2 + b^2 = c^2$.

Let solve the left hand side of the above equation.

$$a^2 + b^2 = 3^2 + 4^2$$
$$= 9 + 16$$
$$= 25$$

Now we will solve the right hand side of the equation,

$$c^2 = 6^2$$
$$= 36$$

Here we can observe that left hand side is not equal to the right hand side.

Therefore, the given triangle is not a right angled triangle.

Triangles Ex 4.7 Q2

Answer :

(i) Let

$a = 7\,\text{cm}$

$b = 24\,\text{cm}$

$c = 25\,\text{cm}$

In order to prove that the given sides of a certain triangle forms a right angled triangle we have to prove that square of the larger side is equal to the sum of the squares of the other two sides.

Here, the larger side is $c = 25\,\text{cm}$.

Hence, we have to prove that $a^2 + b^2 = c^2$.

Let solve the left hand side of the above equation.

$$a^2 + b^2 = 7^2 + 24^2$$
$$= 49 + 576$$
$$= 625$$

Now we will solve the right hand side of the equation,

$$c^2 = 25^2$$
$$= 625$$

Here we can observe that left hand side is equal to the right hand side that is $a^2 + b^2 = c^2$.

Therefore, the given sides of a certain triangle form a right angled triangle.

(ii) Let

$a = 9\,\text{cm}$

$b = 16\,\text{cm}$

$c = 18\,\text{cm}$

In order to prove that the given sides of a certain triangle forms a right angled triangle we have to prove that square of the larger side is equal to the sum of the squares of the other two sides.

Here, the larger side is $c = 18\,\text{cm}$.

Hence, we have to prove that $a^2 + b^2 = c^2$.

Let solve the left hand side of the above equation.

$$a^2 + b^2 = 9^2 + 16^2$$
$$= 81 + 256$$
$$= 337$$

Now we will solve the right hand side of the equation,

$$c^2 = 18^2$$
$$= 324$$

Here we can observe that left hand side is not equal to the right hand side.

Therefore, the given sides of a certain triangle do not form a right angled triangle.

(iii) Let

$a = 1.6\,\text{cm}$

$b = 3.8\,\text{cm}$

$c = 4\,\text{cm}$

In order to prove that the given sides of a certain triangle forms a right angled triangle we have to prove that square of the larger side is equal to the sum of the squares of the other two sides.

Here, the larger side is $c = 4\text{ cm}$.

Hence, we have to prove that $a^2 + b^2 = c^2$.

Let solve the left hand side of the above equation.

$$\begin{aligned} a^2 + b^2 &= (1.6)^2 + (3.8)^2 \\ &= 2.56 + 14.44 \\ &= 17 \end{aligned}$$

Now we will solve the right hand side of the equation,

$$\begin{aligned} c^2 &= 4^2 \\ &= 16 \end{aligned}$$

Here we can observe that left hand side is not equal to the right hand side.

Therefore, the given sides of a certain triangle do not form a right angled triangle.

(iv) Let

$a = 8\text{ cm}$

$b = 10\text{ cm}$

$c = 6\text{ cm}$

In order to prove that the given sides of a certain triangle forms a right angled triangle we have to prove that square of the larger side is equal to the sum of the squares of the other two sides.

Here, the larger side is $b = 10\text{ cm}$.

Hence, we have to prove that $a^2 + c^2 = b^2$.

Let solve the left hand side of the above equation.

$$\begin{aligned} a^2 + c^2 &= (8)^2 + (6)^2 \\ &= 64 + 36 \\ &= 100 \end{aligned}$$

Now we will solve the right hand side of the equation,

$$\begin{aligned} b^2 &= 10^2 \\ &= 100 \end{aligned}$$

Here we can observe that left hand side is equal to the right hand side that is $a^2 + c^2 = b^2$.

Therefore, the given sides of a certain triangle form a right angled triangle.

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