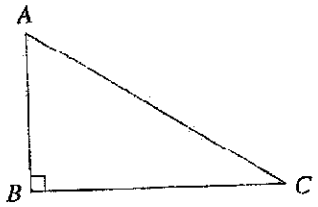
Exercise 10.1

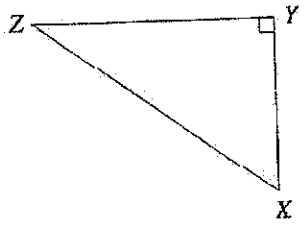
answers on p. 437

1. In each of the following triangles, name the hypotenuse.

(a)

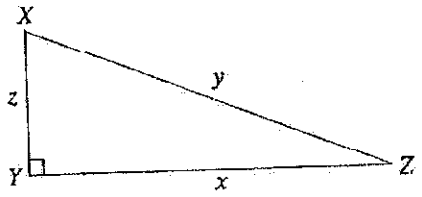


(b)



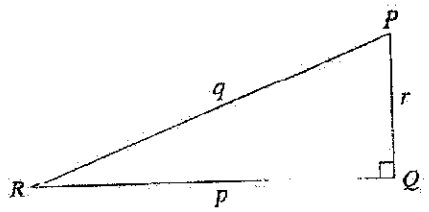
2. In $\triangle XYZ$, $\hat{Y} = 90°$. Find

(a) y if $z = 6$ and $x = 8$,
(b) z if $y = 20$ and $x = 16$,
(c) x if $z = 10$ and $y = 26$.



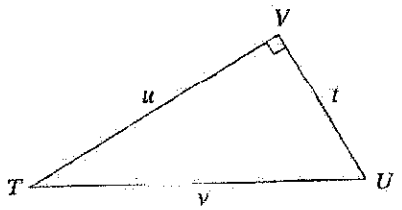
3. In $\triangle PQR$, $\hat{Q} = 90°$. Find

(a) p if $q = 25$ and $r = 7$,
(b) q if $p = 8$ and $r = 15$,
(c) r if $q = 65$ and $p = 16$.



4. In $\triangle TUV$, $\hat{V} = 90°$. Find

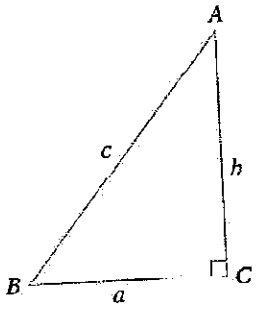
(a) t if $u = 35$ and $v = 37$,
(b) u if $v = 41$ and $t = 40$,
(c) v if $t = 5$ and $u = 12$.



5. Determine which of the following triangles are right-angled and state the right angle.

(a) In $\triangle ABC$, $AB = 8$ cm, $BC = 9$ cm and $AC = 7$ cm.
(b) In $\triangle PQR$, $PQ = 15$ cm, $QR = 25$ cm and $PR = 20$ cm.
(c) In $\triangle XYZ$, $XY = 36$ cm, $YZ = 39$ cm and $XZ = 15$ cm.
(d) In $\triangle STU$, $ST = 9$ cm, $TU = 15$ cm and $SU = 20$ cm.
(e) In $\triangle CDE$, $CD = 8$ cm, $DE = 15$ cm and $CE = 17$ cm.
(f) In $\triangle LMN$, $LM = 20$ cm, $MN = 21$ cm and $NL = 29$ cm.

6.



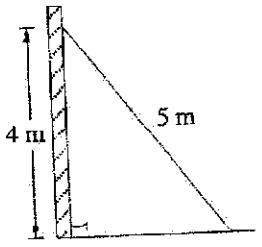
In $\triangle ABC$, $\hat{C} = 90°$. Find, correct to 3 significant figures, the value of

(a) a if **(i)** $b = 3.3$ and $c = 8.8$,
(ii) $b = 19.6$ and $c = 32.3$,
(iii) $b = 1.2$ and $c = 10.8$,
(iv) $b = 144$ and $c = 300$,

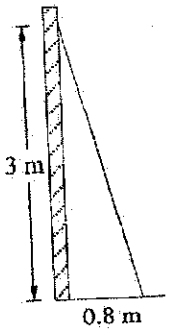
(b) b if **(i)** $a = 19.9$ and $c = 38$,
(ii) $a = 44.4$ and $c = 62$,
(iii) $a = 3.6$ and $c = 9.1$,
(iv) $a = 28.2$ and $c = 32.3$,

(c) c if **(i)** $a = 24.8$ and $b = 7.68$,
(ii) $a = 59.9$ and $b = 31.9$,
(iii) $a = 100$ and $b = 40$,
(iv) $a = 1.24$ and $b = 3.82$.

7. A window-cleaner has a ladder which is 5 metres long. He places it so that it reaches a windowsill 4 metres from the ground. How far from the wall is the foot of the ladder?

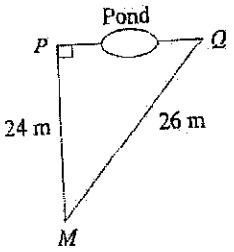


8.

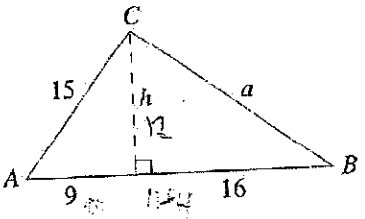


A ladder leans against the wall and reaches a height of 3 m. If the foot of the ladder is 0.8 m from the wall, find, in metres, the length of the ladder. Give your answer correct to 1 decimal place.

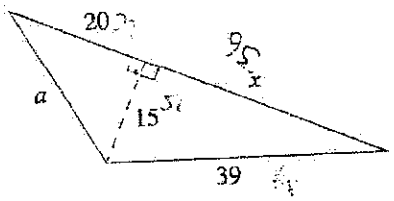
9. P and Q are on the opposite sides of a pond. M is a point such that PM and QM can be measured. It is found that $PM = 24$ m, $QM = 26$ m and $Q\hat{P}M = 90°$. Calculate the distance between P and Q.



10. In the figure on the right, find h and a.

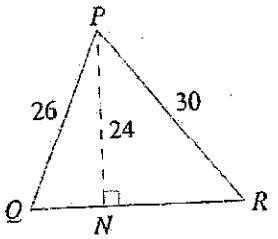


11.

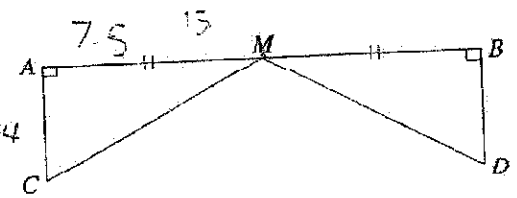


In the figure on the left, find x and a.

12. Calculate the length of QR in $\triangle PQR$.



13. A bridge AB with supports MC and MD is built across a river. If $AB = 15$ m, $AC = 4$ m and $AM = MB$, find the length of the support MC.



14. The rectangular solid on the right has edges with measurements indicated.

(a) Which angle of $\triangle HFB$ is a right angle?

(b) Calculate the length of diagonal BH. (*Hint:* Calculate the length of HF first.)