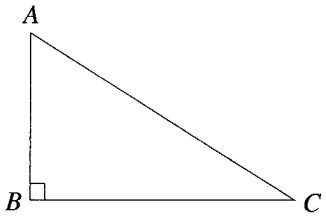
Exercise 10.1

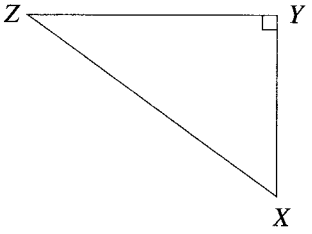
answers on p. 437

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

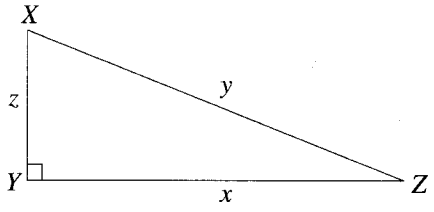
(a)



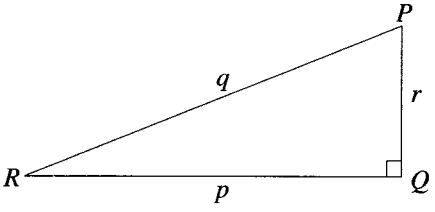
(b)



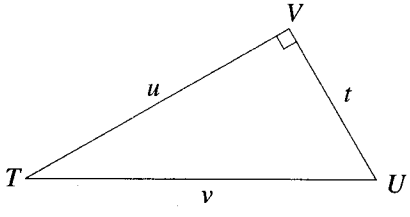
2. In $\triangle XYZ$, $\hat{Y} = 90°$. Find
- **(a)** y if $z = 6$ and $x = 8$,
- **(b)** z if $y = 20$ and $x = 16$,
- **(c)** x if $z = 10$ and $y = 26$.



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 $p = 16$.

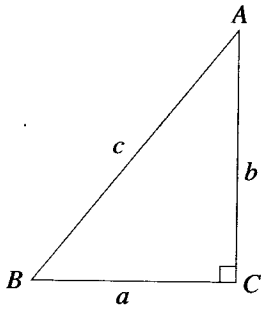


4. In $\triangle TUV$, $\hat{V} = 90°$. Find
- **(a)** t if $u = 35$ and $v = 37$,
- **(b)** u if $v = 41$ and $t = 40$,
- **(c)** v if $t = 5$ and $u = 12$.



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.



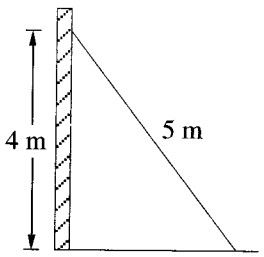
In $\triangle ABC$, $\hat{C} = 90°$. Find, correct to 3 significant figures, the value of

(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 $c = 300$,

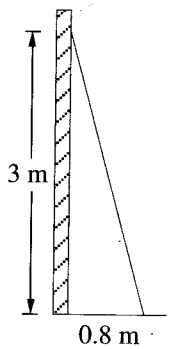
(b) b if **(i)** $a = 19.9$ and $c = 38$,
(ii) $a = 44.4$ and $c = 62$,
(iii) $a = 3.6$ and $c = 9.1$,
(iv) $a = 28.2$ and $c = 32.3$,

(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?

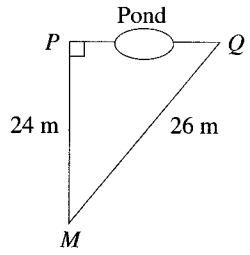


8.

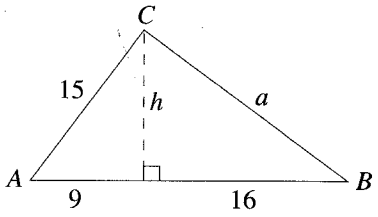


A ladder leans against the wall and reaches a height of 3 m. If the foot of the ladder is 0.8 m from the wall, find, in metres, the length of the ladder. Give your answer correct to 1 decimal place.

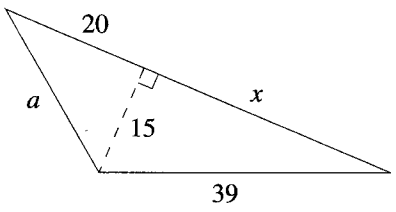
9 P and Q are on the opposite sides of a pond. M is a point such that PM and QM can be measured. It is found that PM = 24 m, QM = 26 m and $Q\hat{P}M = 90°$. Calculate the distance between P and Q.



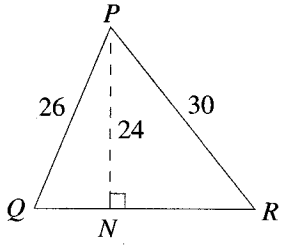
10 In the figure on the right, find h and a.



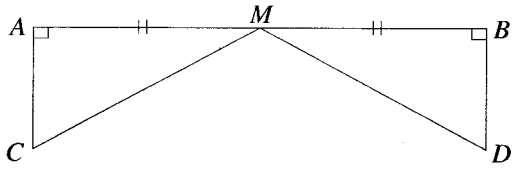
11. In the figure on the left, find x and a.



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



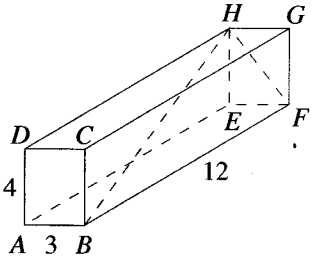
13. A bridge AB with supports MC and MD is built across a river. If AB = 15 m, AC = 4 m and $AM = MB$, find the length of the support MC.



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.)



Chapter 10

Exercise 10.1 *(p. 253)*

1. **(a)** AC **(b)** XZ

2. **(a)** 10 **(b)** 12 **(c)** 24

3. **(a)** 24 **(b)** 17 **(c)** 63

4. **(a)** 12 **(b)** 9 **(c)** 13

5. **(b)** Right-angled triangle; $\hat{P}$

(c) Right-angled triangle; $\hat{X}$

(e) Right-angled triangle; $\hat{D}$

(f) Right-angled triangle; $\hat{M}$

6. **(a)** **(i)** 8.16 **(ii)** 25.7 **(iii)** 10.7 **(iv)** 263

(b) **(i)** 32.4 **(ii)** 43.3 **(iii)** 8.36 **(iv)** 15.7

(c) **(i)** 26.0 **(ii)** 67.9 **(iii)** 108 **(iv)** 4.02

7. 3 m **8.** 3.1 m **9.** 10 m

10. $h = 12$, $a = 20$ **11.** $x = 36$, $a = 25$

12. $QR = 28$ **13.** 8.5 m

14. $B\hat{F}H = 90°$, $BH = 13$ **15.** 24 cm

16. 5 cm **17.** 9 cm