



Attempt questions first; check the separate key afterward. Show all working. Draw accurate figures where required.

A. Very short answers - 1 mark each

1. State the Pythagorean relation for a right triangle.
2. Identify the hypotenuse if angle B in ABC is 90° .
3. Find the hypotenuse for legs 6 cm and 8 cm.
4. Find the missing leg if hypotenuse is 13 cm and other leg 5 cm.
5. Do 8, 15, 17 form a right triangle?
6. Do 6, 8, 11 form a right triangle?
7. Find the diagonal of a rectangle 9 cm by 12 cm.
8. Find the diagonal of a square of side 5 cm.

B. Short answers / practice - 2 marks each

9. A ladder 10 m long reaches a wall 8 m high. Find its foot's distance from the wall.
10. A ladder reaches 12 m high with its foot 5 m away. Find its length.
11. A person walks 8 km east then 6 km north. Find direct distance from the start.
12. Compare direct distance with total walking distance.
13. Find area of a right triangle with legs 9 cm and 40 cm.
14. Find its perimeter.
15. A square has diagonal 12 cm. Find its area.
16. A rectangle has diagonal 25 cm and width 7 cm. Find area.
17. Find the altitude of an equilateral triangle of side 10 cm.
18. Find its area.
19. A rhombus has diagonals 10 cm and 24 cm. Find its side.
20. Find its perimeter.

C. Application / reasoning - 3 marks each

21. Explain why the theorem cannot use any side as hypotenuse.
22. Which side is the hypotenuse in a 7, 24, 25 triangle?
23. Find a Pythagorean triple by doubling 3, 4, 5.
24. Find one by tripling 5, 12, 13.
25. A rectangular park is 60 m by 80 m. Find the diagonal shortcut.
26. How much distance does it save compared with two adjacent sides?
27. Find the missing leg of a right triangle with hypotenuse 41 cm and leg 9 cm.
28. Test whether 12, 16, 20 can be sides of a right triangle.
29. A square has area 50 cm^2 . Find its diagonal.
30. Find the height of an isosceles triangle with equal sides 17 cm and base 16 cm.
31. A person walks 15 km west and 8 km south. Find the shortest distance back.

D. Extended practice - 5 marks per pair

32. Draw four identical right triangles to illustrate the theorem by area.
33. Use the converse to test sides 20, 21, 29.
34. A 17 m wire runs from a pole top to ground 8 m from its base. Find pole height.
35. A 25 m wire reaches an 24 m pole. Find ground distance from the base.

ANSWER KEY - Numerical / closed questions

- 1) Hypotenuse²=sum of squares of legs. 2) AC. 3) 10 cm. 4) 12 cm. 5) Yes. 6) No. 7) 15 cm. 8) $5\sqrt{2}$ cm. 9) 6 m. 10) 13 m. 11) 10 km. 12) 10 km versus 14 km. 13) 180 cm^2 . 14) 90 cm. 15) 72 cm^2 . 16) 168 cm^2 . 17) $5\sqrt{3}$ cm. 18) $25\sqrt{3} \text{ cm}^2$. 19) 13 cm. 20) 52 cm. 22) 25. 23) 6, 8, 10. 24) 15, 36, 39. 25) 100 m. 26) 40 m. 27) 40 cm. 28) Yes. 29) 10 cm. 30) 15 cm. 31) 17 km. 33) Right triangle. 34) 15 m. 35) 7 m.