

Chapter 5 Introduction to Pythagoras's theorem
Homework Solution

Determine Pythagorean triples

1. Check if Pythagorean Triples

- (a) 3,4,5 → Yes
- (b) 5,12,14 → No
- (c) 7,24,25 → Yes
- (d) 8,15,18 → No
- (e) 9,40,41 → Yes
- (f) 11,60,61 → Yes
- (g) 12,35,38 → No
- (h) 15,84,85 → Yes

2. **Find Unknown to Form Triple**

- (a) 2.5, b, 6.5 → $b=6$
- (b) 3.5, x, 12.5 → $x=12$
- (c) 4.5, 7.5, y → $y \approx 8.75$
- (d) 20, z, 29 → $z=21$

Find hypotenuse using Pythagoras's theorem

3. Hypotenuse from (x,y)

- (13,84) → 85
- (20,21) → 29
- (7,24) → 25

4. **Hypotenuse (Calculator, 2 d.p.)**

- (a) 5.69, (b) 5.70, (c) 14.42, (d) 10.97,
- (e) 10.82, (f) 13.45, (g) 11.80, (h) 12.68,
- (i) 15.88, (j) 10.35, (k) 20.74, (l) 11.23.

5. **Two Shorter Sides 20.5 cm, 25.5 cm**

Hypotenuse \approx **32.73 cm**

6. **A4 Diagonal (210 mm × 297 mm)**

Diagonal \approx **36 cm** (nearest cm)

Find the length of a shorter side using Pythagoras's theorem

7. Exact integer solutions:

- (a) $y=4$.
- (b) $x=8$.
- (c) $y=21$.
- (d) $x=12$.

8. Decimal approximations (2 d.p.):

- (a) $y=12.00$.
- (b) $x=13.75$.
- (c) $y=18.33$.

9. Surd form:

- (a) $y=\sqrt{91}$.
- (b) $x=\sqrt{69}$.
- (c) $y=\sqrt{175} = 5\sqrt{7}$.