Pythagoras and Trigonometry - Practice test 2

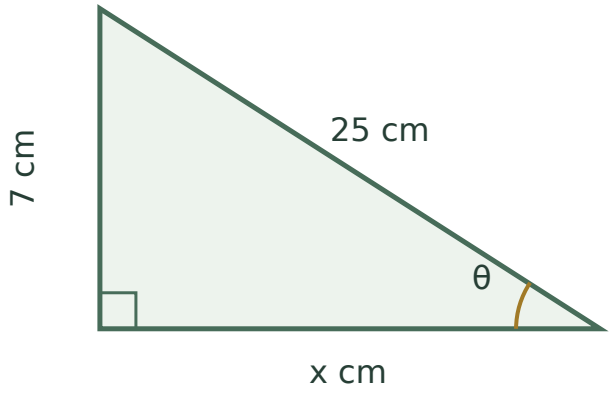
Name: _____ Date: _____

16 questions | 48 marks | 60 minutes

A second balanced paper emphasising interpretation, method selection, bearings and trigonometric representations.

A scientific calculator may be used.

1. A right triangle has hypotenuse 25 cm and one leg 7 cm. Find the other leg. [2 marks]



Sketch not to scale

2. An acute angle has opposite side 11 cm and hypotenuse 19 cm. Find the angle to 0.1°. [2 marks]

3. A platform is 32 m above flat ground. A ground point is 45 m horizontally from its base. Find the depression angle from the platform to 0.1°. [3 marks]

4. A walker goes 9 km west and 12 km north. Find direct distance and bearing from the start to 0.1°. [3 marks]

5. A symmetrical triangular roof has span 28 m and vertical rise 12 m. [3 marks]

(a) Find either sloping side to 0.1 m. [2 marks]

(b) Find the triangular cross-sectional area. [1 mark]

6. In triangle ABC, $A = 65^\circ$, $B = 40^\circ$ and $b = 14$ cm. Find a to 0.1 cm. [3 marks]

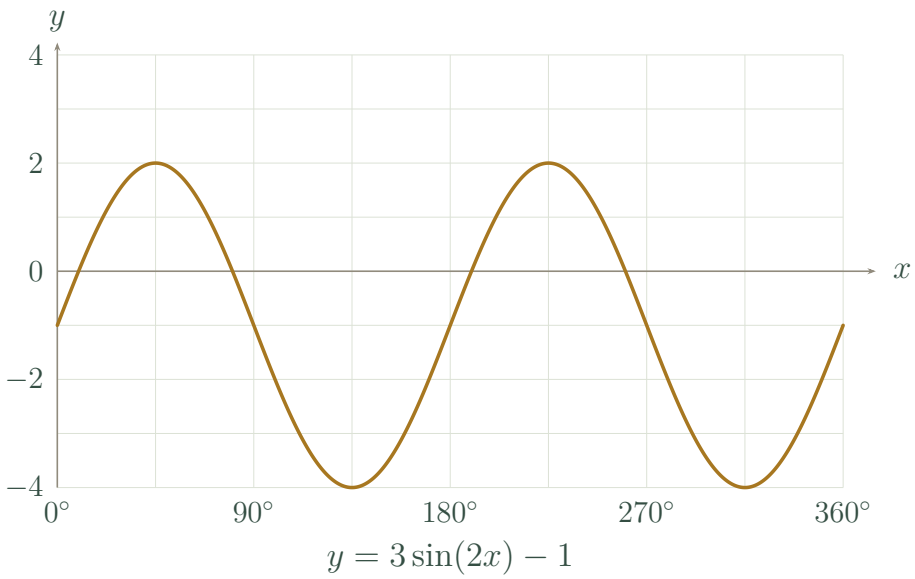
7. A triangle has sides 9 cm, 12 cm and 15 cm. Find the angle opposite 12 cm to 0.1°.
[3 marks]

8. A triangle has sides 9 cm and 16 cm with area 36 cm². Find both possible included angles.
[3 marks]

9. Evaluate $\tan 45^\circ - 2\cos 60^\circ$ exactly. [2 marks]

10. An angle θ is in quadrant IV with $\sin\theta = -\frac{5}{13}$. Find $\cos\theta$ and $\tan\theta$ exactly. [3 marks]

11. The supplied graph shows $y = 3\sin(2x) - 1$. [3 marks]



(a) State its amplitude, midline and range. [2 marks]

(b) State its period. [1 mark]

12. Solve $\cos x = \frac{\sqrt{2}}{2}$ for $0^\circ \leq x \leq 360^\circ$. [3 marks]

13. Solve $\tan(2x) = -1$ for $0^\circ \leq x \leq 180^\circ$. [3 marks]

14. $A = 35^\circ$, $a = 3$ cm and $b = 8$ cm are proposed for a triangle. Is it possible? Justify. [3 marks]

15. Choose a suitable starting method in each case. Give a reason. [3 marks]

(a) A non-right triangle has two sides and their included angle known. [1 mark]

(b) A triangle has two angles and one opposite side known. [1 mark]

(c) A right triangle has both perpendicular sides known. [1 mark]

16. Two straight paths leave a campsite on bearings 060° and 140°. Their endpoints are 70 m and 90 m from the campsite. [6 marks]

(a) Find the smaller angle between the paths. [1 mark]

(b) Find the distance between endpoints to 0.1 m. [3 marks]

(c) Find the triangular area between the paths to 0.1 m². [2 marks]