

Brett Robbins Academic Consulting

Mathematics 10C Practice Test

Unit 1: Trigonometry

25 Questions

Original practice questions written to the Alberta curriculum, in the style of past diploma examinations. Work through each question, then check your answers with the key at the end.

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, contact Brett for clarification.

Question 1

In a right triangle, the side opposite angle θ is 6 cm, the side adjacent to angle θ is 8 cm, and the hypotenuse is 10 cm. The value of $\sin \theta$ is

- A) $\frac{3}{5}$
- B) $\frac{4}{5}$
- C) $\frac{3}{4}$
- D) $\frac{5}{3}$

Question 2

A right triangle has a hypotenuse of 20 m and an acute angle of 30° .

The length of the side opposite the 30° angle is

- A) 17.3 m
- B) 10.0 m
- C) 11.5 m
- D) 23.1 m

Question 3

In right triangle PQR , the right angle is at Q . If $PR = 25$ cm and $PQ = 24$ cm, then $\sin R$ is

- A) $\frac{7}{25}$
- B) $\frac{25}{24}$
- C) $\frac{7}{24}$
- D) $\frac{24}{25}$

Question 4

The angle of elevation of an object, as seen from a point, is

- A) The angle between the line of sight and the vertical
- B) The angle measured downward from the horizontal to the line of sight
- C) The angle measured upward from the horizontal to the line of sight
- D) The angle between the line of sight and the object

Question 5

In a right triangle, an acute angle measures 42° and the side adjacent to it is 15.0 cm. The length of the hypotenuse, to the nearest tenth of a centimetre, is ____ cm

Question 6

In a right triangle, the side opposite angle θ is 5 m and the hypotenuse is 13 m. The measure of angle θ , to the nearest tenth of a degree, is

- | | |
|-----------------|-----------------|
| A) 22.6° | B) 67.4° |
| C) 20.6° | D) 25.4° |

Question 7

A tree casts a shadow 18 m long on level ground. The angle of elevation of the sun is 38° . The height of the tree, to the nearest tenth of a metre, is

- | | |
|-----------|-----------|
| A) 11.1 m | B) 14.1 m |
| C) 23.0 m | D) 29.2 m |

Question 8

A 6.0 m ladder leans against a vertical wall. The ladder makes an angle of 70° with the ground. The height the ladder reaches up the wall, to the nearest tenth of a metre, is

- | | |
|----------|----------|
| A) 2.1 m | B) 5.5 m |
| C) 5.6 m | D) 6.4 m |

Question 9

From the top of a 45 m cliff, the angle of depression of a boat is 28° . The horizontal distance from the base of the cliff to the boat, to the nearest tenth of a metre, is

- | | |
|-----------|-----------|
| A) 21.1 m | B) 39.7 m |
| C) 95.9 m | D) 84.6 m |

Question 10

In a right triangle, the side opposite angle θ is 9 cm and the side adjacent to angle θ is 16 cm. The measure of angle θ , to the nearest degree, is ____°

Question 11

A loading ramp is 8.0 m long. One end rests on the ground and the other end reaches a platform 1.2 m above the ground. The angle the ramp makes with the ground, to the nearest tenth of a degree, is

- | | |
|-----------------|----------------|
| A) 8.6° | B) 9.9° |
| C) 81.4° | D) 6.7° |

Question 12

In a right triangle, the hypotenuse is 17 cm and an acute angle is 53° . The length of the side opposite the 53° angle, to the nearest tenth of a centimetre, is

- | | |
|------------|------------|
| A) 10.2 cm | B) 21.3 cm |
| C) 13.6 cm | D) 12.8 cm |

Question 13

A guy wire is attached to the top of a 12 m pole and anchored in the ground 9 m from the base of the pole. The angle the wire makes with the ground, to the nearest degree, is

- | | |
|---------------|---------------|
| A) 37° | B) 53° |
| C) 41° | D) 49° |

Question 14

A kite is flying on a string that is 65 m long. The string is taut and makes an angle of 58° with the horizontal, and the string is held at ground level. The height of the kite above the ground, to the nearest tenth of a metre, is ____ m

Question 15

In right triangle ABC , the right angle is at C . Angle B is 64° and the side adjacent to angle B is 7.5 cm. The length of the hypotenuse, to the nearest tenth of a centimetre, is

- | | |
|------------|------------|
| A) 3.3 cm | B) 6.7 cm |
| C) 15.0 cm | D) 17.1 cm |

Question 16

An observer stands 30 m from the base of a building on level ground. The angle of elevation of the top of the building is 47° . The height of the building, to the nearest tenth of a metre, is

- | | |
|-----------|-----------|
| A) 32.2 m | B) 28.0 m |
| C) 21.9 m | D) 20.5 m |

Question 17

From the top of a lighthouse 60 m above the water, the angle of depression of a ship is 12° . The horizontal distance from the base of the lighthouse to the ship, to the nearest tenth of a metre, is

- A) 12.5 m B) 58.7 m
- C) 282.3 m D) 288.6 m

Question 18

The foot of a 7.2 m ladder is placed 1.8 m from the base of a vertical wall. The angle the ladder makes with the ground, to the nearest tenth of a degree, is ____°

Question 19

In a right triangle, x is the side opposite angle θ and the hypotenuse is 14. An equation that can be used to find x is

- A) $x = 14\sin \theta$
B) $x = 14\cos \theta$
C) $x = 14\tan \theta$
D) $x = \frac{14}{\sin \theta}$

Question 20

From a point on level ground, the angle of elevation of the top of a flagpole is 41° . The point is 25 m from the base of the flagpole, and the observer's eyes are 1.7 m above the ground. The height of the flagpole, to the nearest tenth of a metre, is

- | | |
|-----------|-----------|
| A) 21.7 m | B) 18.9 m |
| C) 25.0 m | D) 23.4 m |

Question 21

In a right triangle, an acute angle is 27° and the side opposite it is 11.5 cm. The length of the side adjacent to the 27° angle, to the nearest tenth of a centimetre, is ____ cm

Question 22

An airplane is at an altitude of 8000 m. The pilot measures an angle of depression of 9° to an airport. The horizontal distance from the airplane to the airport, to the nearest tenth of a kilometre, is

- | | |
|------------|------------|
| A) 1.3 km | B) 50.5 km |
| C) 51.1 km | D) 7.9 km |

Question 23

In a right triangle, the side adjacent to angle θ is 11 cm and the hypotenuse is 19 cm. The measure of angle θ , to the nearest tenth of a degree, is ____ $^\circ$

Question 24

In a right triangle, the hypotenuse is 21 cm and an acute angle A measures 48° . The lengths of the side opposite angle A and the side adjacent to angle A , respectively, to the nearest tenth of a centimetre, are

A) Opposite : 14.1 cm

Adjacent : 15.6 cm

B) Opposite : 15.6 cm

Adjacent : 14.1 cm

C) Opposite : 15.6 cm

Adjacent : 23.3 cm

D) Opposite : 12.5 cm

Adjacent : 17.0 cm

Question 25

A kite is 36 m above the hand of the person flying it, and the point on the ground directly below the kite is 42 m from the person. The length of the taut kite string, to the nearest tenth of a metre, is ____ m

Answer Key

- | | | |
|---------|----------|----------|
| 1. A | 10. 29 | 19. A |
| 2. B | 11. A | 20. D |
| 3. D | 12. C | 21. 22.6 |
| 4. C | 13. B | 22. B |
| 5. 20.2 | 14. 55.1 | 23. 54.6 |
| 6. A | 15. D | 24. B |
| 7. B | 16. A | 25. 55.3 |
| 8. C | 17. C | |
| 9. D | 18. 75.5 | |

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