

Brett Robbins Academic Consulting

Mathematics 20-1 Practice Test

Unit 2: 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

The point (6, 8) lies on the terminal arm of an angle θ in standard position.

The exact value of $\sin \theta$ is

A) $\frac{3}{5}$

B) $\frac{4}{5}$

C) $\frac{5}{3}$

D) $\frac{3}{4}$

Question 2

The exact value of $\sin 30^\circ + \cos 60^\circ$ is

A) $\frac{1}{2}$

B) $\frac{\sqrt{3}}{2}$

C) 1

D) $\sqrt{3}$

Question 3

The reference angle for an angle of 218° in standard position is

A) 38°

B) 52°

C) 128°

D) 142°

Question 4

In a right triangle, angle A measures 40° and the hypotenuse is 25 cm long.

The length of the side adjacent to angle A , to the nearest tenth of a centimetre, is

A) 16.1 cm

B) 21.0 cm

C) 32.6 cm

D) 19.2 cm

Question 5

An angle θ in standard position has $\sin \theta = \frac{5}{13}$, and θ is in Quadrant II.

If $\cos \theta = -\frac{a}{b}$ in lowest terms, then the value of $a + b$ is

Question 6

In $\triangle ABC$, $\angle A = 52^\circ$, $\angle B = 68^\circ$, and side $a = 14$ cm.

The length of side b , to the nearest tenth of a centimetre, is

- | | |
|------------|------------|
| A) 16.5 cm | B) 11.9 cm |
| C) 14.7 cm | D) 18.3 cm |

Question 7

Two sides of a triangle measure 7 cm and 10 cm,

and the angle between them is 63° .

The length of the third side, to the nearest tenth of a centimetre, is

- | | |
|-----------|------------|
| A) 7.9 cm | B) 13.0 cm |
| C) 9.2 cm | D) 10.8 cm |

Question 8

From a point on level ground 45 m from the base of a building,

the angle of elevation of the top of the building is 38° .

The height of the building, to the nearest metre, is

- | | |
|---------|---------|
| A) 28 m | B) 35 m |
| C) 58 m | D) 73 m |

If $\sin \theta = -\frac{\sqrt{3}}{2}$ and θ is in Quadrant IV, then the measure of θ is

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Question 13

The sides of a triangle measure 8 cm, 11 cm, and 13 cm.

The measure of the largest angle of the triangle, to the nearest degree, is

- A) 72°
B) 85°
C) 79°
D) 95°

Question 14

The top of a lighthouse is 60 m above sea level.

From the top of the lighthouse, the angle of depression of a boat is 25° .

The distance from the base of the lighthouse to the boat, to the nearest metre, is _____

Question 15

A 5.2 m ladder leans against a vertical wall, and the foot of the ladder is 1.6 m from the wall.

The angle that the ladder makes with the ground, to the nearest degree, is

- A) 18°
B) 63°
C) 69°
D) 72°

Question 16

In $\triangle ABC$, $\angle A = 110^\circ$, side $a = 17$ cm, and side $b = 13$ cm.

The measure of angle B , to the nearest degree, is

- A) 46°
B) 42°
C) 52°
D) 134°

Question 17

Two ships leave the same port at the same time. One travels 45 km and the other travels 60 km, and the angle between their paths is 72° .

The distance between the two ships, to the nearest kilometre, is ____

Question 18

For $\theta = 325^\circ$, the primary trigonometric ratio that is positive is

- | | |
|-----------|-----------------------|
| A) Sine | B) Tangent |
| C) Cosine | D) None of the ratios |

Question 19

From a point on the ground, the angle of elevation of the top of a tower is 28° .

After walking 30 m directly toward the tower, the angle of elevation is 47° .

The height of the tower, to the nearest metre, is

- | | |
|---------|---------|
| A) 24 m | B) 32 m |
| C) 28 m | D) 39 m |

Question 20

In $\triangle ABC$, $\angle A = 40^\circ$, side $a = 11$ cm, and side $b = 14$ cm.

Two different triangles are possible. The larger possible measure of angle B , to the nearest degree, is ____

Question 21

A parallelogram has sides of 9 cm and 14 cm, and one diagonal measures 17 cm.

The measure of the smaller angle of the parallelogram, to the nearest degree, is

- A) 76°
B) 83°
C) 93°
D) 87°

Question 22

A kite is flown on a string that is 85 m long.

The string makes an angle of elevation of 52° with the ground,

and the string is held 1 m above the ground.

The height of the kite above the ground, to the nearest metre, is

- A) 68 m B) 52 m
C) 67 m D) 85 m

Question 23

An angle θ in standard position, $0^\circ \leq \theta < 360^\circ$, satisfies

$\cos \theta = -\frac{\sqrt{3}}{2}$ and $\sin \theta < 0$. The measure of θ , in degrees, is ____

Question 24

In $\triangle ABC$, $\angle A = 38^\circ$, $\angle B = 85^\circ$, and side $b = 19$ cm.

The length of side a , to the nearest tenth of a centimetre, is

- A) 13.9 cm B) 16.0 cm
C) 11.7 cm D) 21.3 cm

Question 25

Points A and B are on the same side of a river, 50 m apart.

A tree T is on the opposite bank. In $\triangle ABT$, $\angle A = 64^\circ$ and $\angle B = 52^\circ$.

The distance from point A to the tree, to the nearest metre, is ____

Answer Key

- | | | |
|-------|----------|---------|
| 1. B | 10. 14.6 | 19. B |
| 2. C | 11. A | 20. 125 |
| 3. A | 12. C | 21. D |
| 4. D | 13. B | 22. A |
| 5. 25 | 14. 129 | 23. 210 |
| 6. A | 15. D | 24. C |
| 7. C | 16. A | 25. 44 |
| 8. B | 17. 63 | |
| 9. D | 18. C | |

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