ExamPath

CLASS 9 MATHEMATICS · FBISE · UNIT 6

Unit 6: Trigonometry and Bearing — Beginner Practice

15 multiple-choice questions Suggested time: **15 minutes** 1 mark each

Name: Date: Score: / 15

Circle one answer for each question. The answer key with explanations is on the last pages, so try every question before you check. These are practice questions, not official FBISE papers.

1. An arc of a circle has the same length as the radius. The central angle of that arc is:

(A) 1 radian
(B) 2π radians
(C) 1 degree
(D) π radians

2. The measure of a complete angle in the circular system is:

(A) 2π radians
(B) π radians
(C) 360 radians
(D) π/2 radians

3. Which angle is co-terminal with 30°?

(A) 390°
(B) 330°
(C) 210°
(D) 150°

4. The value of cos 60° is:

(A) 1
(B) 1/√2
(C) 1/2
(D) √3/2

5. How many minutes are there in one degree?

(A) 360
(B) 3600
(C) 60
(D) 100

6. In which quadrant are both sin θ and cos θ negative?

(A) Fourth quadrant
(B) Third quadrant
(C) Second quadrant
(D) First quadrant

7. An angle is drawn by turning the terminal side clockwise from the initial side. Its measure is:

(A) always acute
(B) negative
(C) always zero
(D) positive

8. Which relation correctly connects degrees and radians?

(A) π radians = 360°
(B) π radians = 180°
(C) 1 radian = 1°
(D) 2π radians = 180°

9. Convert 45° to radians.

(A) π/2
(B) π/4
(C) π/6
(D) π/3

10. From a point 20 m from the foot of a tree, the angle of elevation of its top is 45°. What is the height of the tree?

(A) 10 m
(B) 20√2 m
(C) 20 m
(D) 40 m

11. The bearing of B from A is 040°. What is the bearing of A from B?

(A) 140°
(B) 040°
(C) 320°
(D) 220°

12. Which of these angles is a quadrantal angle?

(A) 270°
(B) 120°
(C) 45°
(D) 60°

13. The system of angle measurement that uses degrees, minutes and seconds is called the:

(A) centesimal system
(B) metric system
(C) sexagesimal system
(D) circular system

14. In a right-angled triangle, which ratio defines tan θ?

(A) hypotenuse / perpendicular
(B) perpendicular / hypotenuse
(C) base / hypotenuse
(D) perpendicular / base

15. Which of these is a correct trigonometric identity?

(A) $\sin^2\theta - \cos^2\theta = 1$
(B) $\tan\theta + \cot\theta = 1$
(C) $\sin\theta + \cos\theta = 1$
(D) $\sin^2\theta + \cos^2\theta = 1$

Answer key

Unit 6 · Beginner Practice

1 A	**2** A	**3** A	**4** C	**5** C
6 B	**7** B	**8** B	**9** B	**10** C
11 D	**12** A	**13** C	**14** D	**15** D

Explanations

1. A. 1 radian
One radian is the central angle of an arc whose length equals the radius.

2. A. 2π radians
A full turn is 360° = 2π radians.

3. A. 390°
Co-terminal angles differ by a multiple of 360°. 390° − 30° = 360°.

4. C. 1/2
From the unit circle, the point at 60° is (1/2, √3/2), so cos 60° = 1/2.

5. C. 60
1° = 60′. There are 60 seconds in a minute, so 1° = 3600″.

6. B. Third quadrant
In the third quadrant both x and y coordinates are negative, so sin θ and cos θ are negative.

7. B. negative
Anticlockwise angles are positive and clockwise angles are negative.

8. B. π radians = 180°
A half turn is 180°, which equals π radians.

9. B. π/4
45 × π/180 = π/4 radians.

10. C. 20 m
tan 45° = 1, so height = 20 × 1 = 20 m.

11. D. 220°
Add 180°: 040° + 180° = 220°.

12. A. 270°
A quadrantal angle is a multiple of 90°. Of the four, only 270° is.

13. C. sexagesimal system
Degrees, minutes and seconds belong to the sexagesimal (English) system.

14. D. perpendicular / base
tan θ = perpendicular ÷ base.

15. D. $\sin^2\theta + \cos^2\theta = 1$
$\sin^2\theta + \cos^2\theta = 1$ holds for every angle. The others fail for some angles.

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