ExamPath

CLASS 9 MATHEMATICS · FBISE · UNIT 8

Unit 8: Geometry of Straight Lines — 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. Which statement is correct for the line $y = -2x + 5$?

(A) The slope is −2 and the x-intercept is 5
(B) The slope is −2 and the y-intercept is 5
(C) The slope is 2 and the y-intercept is 5
(D) The slope is 5 and the y-intercept is −2

2. If m_1 and m_2 are the gradients of two perpendicular lines, then:

(A) $m_1 \times m_2 = -1$
(B) $m_1 = m_2$
(C) $m_1 + m_2 = 0$
(D) $m_1 \times m_2 = 1$

3. What does the equation $x = 4$ represent?

(A) A line through the origin with slope 4
(B) A horizontal line 4 units above the x-axis
(C) A vertical line 4 units to the right of the y-axis
(D) A line with y-intercept 4

4. The y-intercept of a line is:

(A) the y-coordinate of the point where the line crosses the y-axis
(B) the distance from the origin to the line
(C) the slope of the line
(D) the y-coordinate of the point where the line crosses the x-axis

5. Find the gradient of the line joining (2, 6) and (5, 8).

(A) −2/3
(B) 14/7
(C) 2/3
(D) 3/2

6. Find the equation of the horizontal line passing through (2, 3).

(A) $y = 3$
(B) $x = 2$
(C) $y = 2$
(D) $x = 3$

7. The inclination of a line is the angle it makes with the:

(A) y-axis, measured anticlockwise
(B) negative x-axis, measured clockwise
(C) line $y = x$
(D) positive x-axis, measured anticlockwise

8. The gradient of a horizontal line is:

(A) -1
(B) 0
(C) 1
(D) undefined

9. Find the gradient of a line whose inclination is $45°$.

(A) undefined
(B) 0
(C) $\sqrt{3}$
(D) 1

10. Why is the gradient of a vertical line undefined?

(A) Its inclination is $0°$
(B) Its rise is zero
(C) Its inclination is $90°$, and $\tan 90°$ is undefined
(D) It passes through the origin

11. What is true about the gradients of two parallel non-vertical lines?

(A) They are equal
(B) They are opposite in sign
(C) Their product is -1
(D) One is zero

12. A line rises from left to right. What can you say about its gradient?

(A) It is undefined
(B) It is positive, and its inclination is between $0°$ and $90°$
(C) It is negative
(D) It is zero

13. The gradient of the line joining (x_1, y_1) and (x_2, y_2) is:

(A) $(y_2 + y_1)/(x_2 + x_1)$
(B) $(y_2 - y_1)/(x_1 - x_2)$
(C) $(y_2 - y_1)/(x_2 - x_1)$
(D) $(x_2 - x_1)/(y_2 - y_1)$

14. Why does it not matter which point is called (x_1, y_1) in the gradient formula?

(A) Because the gradient is always positive
(B) Swapping the points changes the sign of both the numerator and the denominator, so the ratio stays the same
(C) Because the two points have equal coordinates
(D) Because the line is horizontal

15. The slope-intercept form of the equation of a line is:

(A) $x/a + y/b = 1$

(B) $x \cos \alpha + y \sin \alpha = p$

(C) $y - y_1 = m(x - x_1)$

(D) $y = mx + c$

Answer key

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

Explanations

1. B. The slope is −2 and the y-intercept is 5
Comparing with $y = mx + c$ gives $m = -2$ and $c = 5$.

2. A. $m_1 \times m_2 = -1$
The slopes of perpendicular lines multiply to give −1.

3. C. A vertical line 4 units to the right of the y-axis
Every point on $x = a$ has the same x-coordinate, so the line is parallel to the y-axis.

4. A. the y-coordinate of the point where the line crosses the y-axis
If the line meets the y-axis at (0, b), then b is its y-intercept.

5. C. 2/3
$m = (8 - 6)/(5 - 2) = 2/3$.

6. A. y = 3
A horizontal line has the form $y = b$, and b is the y-coordinate of the point, so $y = 3$.

7. D. positive x-axis, measured anticlockwise
Inclination θ is measured from the positive direction of the x-axis in the anticlockwise direction.

8. B. 0
A horizontal line has $\theta = 0°$, so $m = \tan 0° = 0$.

9. D. 1
$m = \tan 45° = 1$.

10. C. Its inclination is 90°, and tan 90° is undefined
A vertical line has zero run, so rise ÷ run cannot be calculated. Equivalently, tan 90° is undefined.

11. A. They are equal
Parallel lines make the same angle with the x-axis, so they have the same slope.

12. B. It is positive, and its inclination is between 0° and 90°
For $0° < \theta < 90°$, $\tan \theta$ is positive.

13. C. $(y_2 - y_1)/(x_2 - x_1)$
Gradient = rise ÷ run = difference in y ÷ difference in x, taken in the same order.

14. B. Swapping the points changes the sign of both the numerator and the denominator, so the ratio stays the same
$(y_1 - y_2)/(x_1 - x_2) = (y_2 - y_1)/(x_2 - x_1)$, as long as both differences are taken in the same order.

15. D. y = mx + c
Here m is the slope and c is the y-intercept.

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