ExamPath

CLASS 9 MATHEMATICS · FBISE · UNIT 9

Unit 9: Geometry and Polygons — 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. Why is a rectangle that is not a square not a regular polygon?

(A) It has fewer than four sides
(B) Its angles are not all equal
(C) Its angles are not right angles
(D) Its sides are not all equal

2. At each vertex of a polygon, the interior angle and the exterior angle add up to 180° because they:

(A) are complementary
(B) are corresponding angles
(C) are vertically opposite
(D) form a linear pair

3. Which pair of figures is always similar?

(A) Two rectangles of different sizes
(B) Two parallelograms of different sizes
(C) Two rhombuses of different sizes
(D) Two squares of different sizes

4. Every point on the perpendicular bisector of AB is:

(A) equidistant from A and B
(B) at a distance AB from A
(C) closer to B than to A
(D) closer to A than to B

5. The sum of the interior angles of a polygon with n sides is:

(A) 360°
(B) (n − 2) × 180°
(C) n × 180°
(D) (n − 1) × 180°

6. Which is an example of deductive reasoning?

(A) It rained on three Mondays, so it always rains on Mondays
(B) All squares have four equal sides; ABCD is a square, so ABCD has four equal sides
(C) Every swan I have seen is white, so all swans are white
(D) The odd numbers 3, 5 and 7 are prime, so all odd numbers are prime

7. Each exterior angle of a regular polygon is 45°. How many sides does it have?

(A) 8
(B) 9
(C) 6
(D) 10

8. Triangle ABC is similar to triangle PQR. If AB = 3 cm, BC = 4 cm, AC = 5 cm and PQ = 6 cm, what is QR?

(A) 7 cm
(B) 8 cm
(C) 12 cm
(D) 10 cm

9. A statement that is accepted as true without proof is called an:

(A) theorem
(B) conjecture
(C) axiom (postulate)
(D) corollary

10. Reasoning that moves from specific observations to a general conclusion is called:

(A) indirect reasoning
(B) inductive reasoning
(C) circular reasoning
(D) deductive reasoning

11. Why is the sum of the exterior angles of a hexagon equal to that of an octagon?

(A) Both have equal interior angles
(B) Both have an even number of sides
(C) The sum is 360° for every polygon
(D) Both are regular

12. What is the measure of each interior angle of a regular hexagon?

(A) 135°
(B) 60°
(C) 120°
(D) 108°

13. Two similar triangles have corresponding sides in the ratio 1 : 2. What is the ratio of their areas?

(A) 1 : 8
(B) 1 : 2
(C) 1 : 4
(D) 2 : 1

14. The locus of a point that stays at a fixed distance from a fixed point in a plane is a:

(A) circle
(B) straight line
(C) perpendicular bisector
(D) pair of parallel lines

15. Why is 'x + 3 = 7' called an open sentence rather than a statement?

(A) Its truth depends on the value of x
(B) It is always false
(C) It contains no variable
(D) It is always true

Answer key

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

Explanations

1. **D. Its sides are not all equal**
A regular polygon needs equal sides and equal angles. A rectangle has equal angles but unequal adjacent sides.

2. **D. form a linear pair**
The exterior angle is formed by extending a side, so it sits on a straight line with the interior angle.

3. **D. Two squares of different sizes**
All squares have 90° angles and sides in the same ratio, so any two are similar. Rectangles, rhombuses and parallelograms can have different shapes.

4. **A. equidistant from A and B**
The perpendicular bisector is the locus of points equidistant from the two end points.

5. **B. (n – 2) × 180°**
Joining one vertex to the others splits the polygon into n – 2 triangles, each with angle sum 180°.

6. **B. All squares have four equal sides; ABCD is a square, so ABCD has four equal sides**
Deductive reasoning applies a general rule to a particular case. The other options generalise from a few cases.

7. **A. 8**
n = 360° ÷ 45° = 8, so it is a regular octagon.

8. **B. 8 cm**
The scale factor is PQ/AB = 6/3 = 2, so QR = 2 × BC = 8 cm.

9. **C. axiom (postulate)**
Axioms (postulates) are the starting assumptions; theorems must be proved from them.

10. **B. inductive reasoning**
Inductive reasoning generalises from patterns seen in particular cases. Its conclusions are probable, not proved.

11. **C. The sum is 360° for every polygon**
One exterior angle taken at each vertex always adds up to 360°, whatever the number of sides.

12. **C. 120°**
Angle sum = (6 – 2) × 180° = 720°, and 720° ÷ 6 = 120°.

13. **C. 1 : 4**
The ratio of areas equals the square of the ratio of lengths: $1^2 : 2^2 = 1 : 4$.

14. **A. circle**
All points at distance r from a centre O form a circle of radius r.

15. **A. Its truth depends on the value of x**
It is true for x = 4 and false for other values, so it cannot be called simply true or false until x is given.

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