1. Based on the construction below, which statement must be true?

1) \( m\angle ABD = \frac{1}{2} m\angle CBD \)
2) \( m\angle ABD = m\angle CBD \)
3) \( m\angle ABD = m\angle ABC \)
4) \( m\angle CBD = \frac{1}{2} m\angle ABD \)

2. Which geometric principle is used to justify the construction below?

1) A line perpendicular to one of two parallel lines is perpendicular to the other.
2) Two lines are perpendicular if they intersect to form congruent adjacent angles.
3) When two lines are intersected by a transversal and alternate interior angles are congruent, the lines are parallel.
4) When two lines are intersected by a transversal and the corresponding angles are congruent, the lines are parallel.

3. Which diagram shows the construction of the perpendicular bisector of \( \overline{AB} \)?

1) [Diagram 1]
2) [Diagram 2]
3) [Diagram 3]
4) [Diagram 4]
4. Which illustration shows the correct construction of an angle bisector?

1) 

2) 

3) 

4) 

5. Which diagram shows the construction of an equilateral triangle?

1) 

2) 

6. The diagram below shows the construction of a line through point $P$ perpendicular to line $m$.

Which statement is demonstrated by this construction?

1) If a line is parallel to a line that is perpendicular to a third line, then the line is also perpendicular to the third line.

2) The set of points equidistant from the endpoints of a line segment is the perpendicular bisector of the segment.

3) Two lines are perpendicular if they are equidistant from a given point.

4) Two lines are perpendicular if they intersect to form a vertical line.
7. Line segment $AB$ is shown in the diagram below.

Which two sets of construction marks, labeled I, II, III, and IV, are part of the construction of the perpendicular bisector of line segment $AB$?

1) I and II
2) I and III
3) II and III
4) II and IV

8. The diagram below shows the construction of the bisector of $\angle ABC$.

Which statement is not true?

1) $m\angle EBF = \frac{1}{2} m\angle ABC$
2) $m\angle DBF = \frac{1}{2} m\angle ABC$
3) $m\angle EBF = m\angle ABC$
4) $m\angle DBF = m\angle EBF$

9. The diagram below shows the construction of the center of the circle circumscribed about $\triangle ABC$.

This construction represents how to find the intersection of

1) the angle bisectors of $\triangle ABC$
2) the medians to the sides of $\triangle ABC$
3) the altitudes to the sides of $\triangle ABC$
4) the perpendicular bisectors of the sides of $\triangle ABC$

10. Which geometric principle is used in the construction shown below?

1) The intersection of the angle bisectors of a triangle is the center of the inscribed circle.
2) The intersection of the angle bisectors of a triangle is the center of the circumscribed circle.
3) The intersection of the perpendicular bisectors of the sides of a triangle is the center of the inscribed circle.
4) The intersection of the perpendicular bisectors of the sides of a triangle is the center of the circumscribed circle.
11. The diagram below shows the construction of the perpendicular bisector of $AB$.

Which statement is not true?
1) $AC = CB$
2) $CB = \frac{1}{2} AB$
3) $AC = 2AB$
4) $AC + CB = AB$

12. The diagram below illustrates the construction of $\overrightarrow{FS}$ parallel to $\overrightarrow{RQ}$ through point $P$.

Which statement justifies this construction?
1) $m\angle 1 = m\angle 2$
2) $m\angle 1 = m\angle 3$
3) $PR \cong RQ$
4) $FS \cong RQ$
13. Using a compass and straightedge, and \( \overline{AB} \) below, construct an equilateral triangle with all sides congruent to \( \overline{AB} \). [Leave all construction marks.]

14. On the diagram below, use a compass and straightedge to construct the bisector of \( \angle ABC \). [Leave all construction marks.]

15. Using a compass and straightedge, construct a line that passes through point \( P \) and is perpendicular to line \( m \). [Leave all construction marks.]
16. Using a compass and straightedge, on the diagram below of \( \overrightarrow{RS} \), construct an equilateral triangle with \( \overrightarrow{RS} \) as one side. [Leave all construction marks.]

17. Using a compass and straightedge, construct the angle bisector of \( \angle ABC \) shown below. [Leave all construction marks.]