14. The center of the circle that can be circumscribed about a given triangle is $\underline{?}$ outside the triangle.

15. Given two segments with lengths r and s, it is $\underline{?}$ possible to construct a segment of length $\frac{3}{4}\sqrt{2rs}$.

16. A median of a triangle $\underline{?}$ separates the triangle into two triangles with equal areas.

17. A composite of reflections in two lines is $\underline{?}$ a translation.

Construction Exercises

A

1. Construct an angle of measure $22\frac{1}{2}$.

2. Draw a circle O and choose a point T on $\odot O$. Construct the tangent to $\odot O$ at T.

3. Draw a large triangle. Inscribe a circle in the triangle.

For Exercises 4–7, draw two long segments. Let their lengths be x and y, with $x > y$.

4. Construct a segment of length $\frac{1}{2}(x + y)$.

B

5. Construct a rectangle with width y and diagonal x.

6. Construct any triangle with area xy.

7. Construct a segment with length $\sqrt{3xy}$.

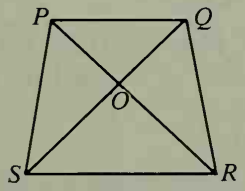
8. Draw a very long $\overline{AB}$. Construct a rectangle with perimeter AB and sides in the ratio 3:2.

Proof Exercises

A

1. Given: $\overline{PQ} \parallel \overline{RS}$
Prove: $\frac{PO}{RO} = \frac{PQ}{RS}$

2. Given: $\overline{PR} \perp \overline{QS}$; $\overline{PS} \cong \overline{QR}$; $\overline{OS} \cong \overline{OR}$
Prove: $\angle PSO \cong \angle QRO$



Exs. 1–3

B

3. Given: $\angle OSR \cong \angle ORS$; $\angle OPQ \cong \angle OQP$
Prove: $\triangle PSR \cong \triangle QRS$

4. Prove: The diagonals of a rectangle intersect to form four congruent segments.

5. Use coordinate geometry to prove that the triangle formed by joining the midpoints of the sides of an isosceles triangle is an isosceles triangle.

C

6. Use an indirect proof to show that a trapezoid cannot have two pairs of congruent sides.

7. Prove: If two coplanar circles intersect in two points, then the line joining those points bisects a common tangent segment.