

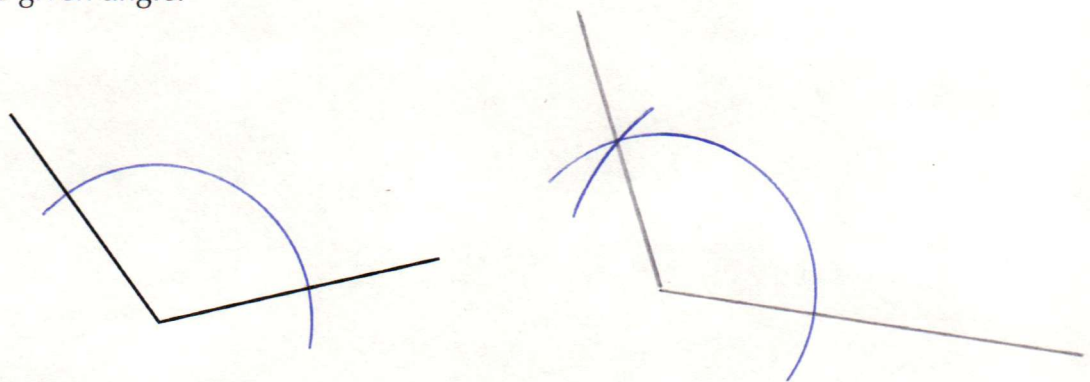
Unit 8 Review Geometry Constructions & Congruence

Constructions – Construction marks must be clear.

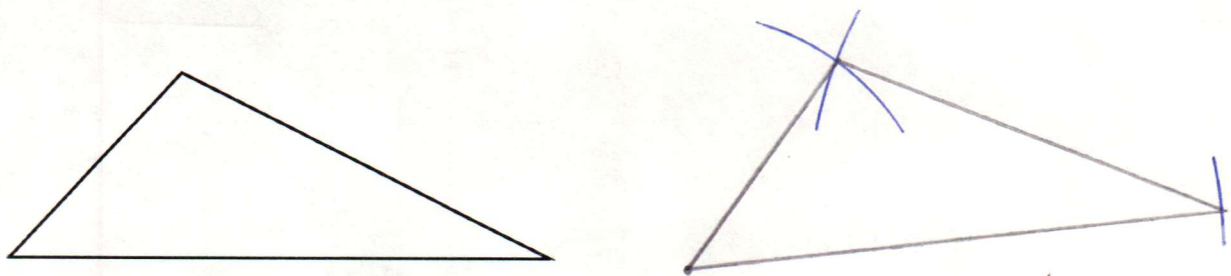
1. Copy the given line segments.



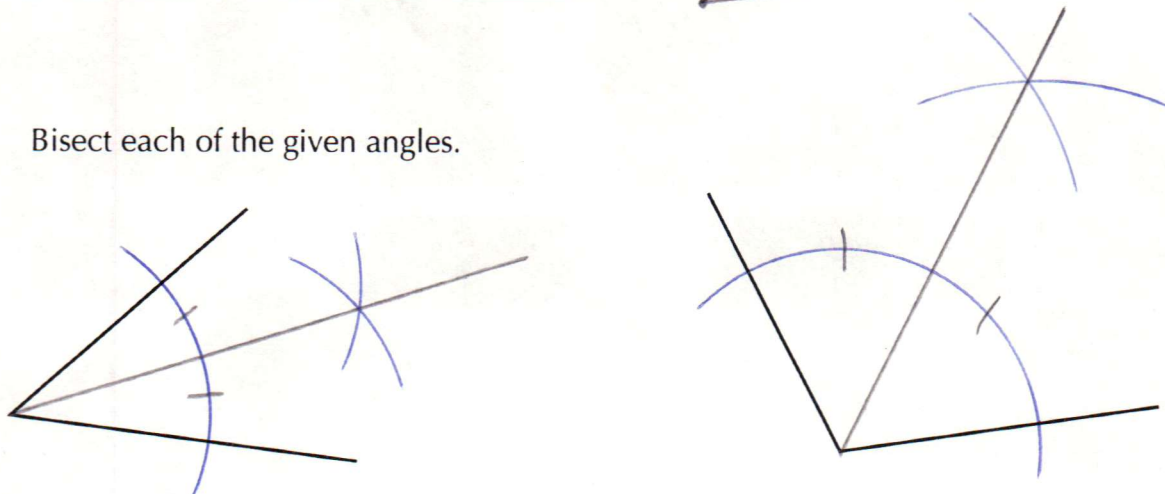
2. Copy the given angle.



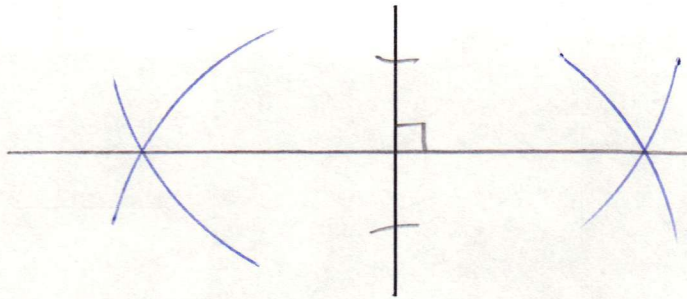
3. Copy the given triangle.



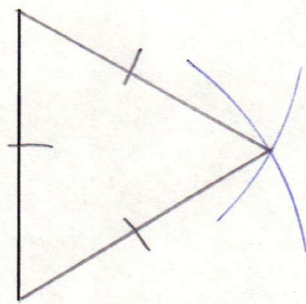
4. Bisect each of the given angles.



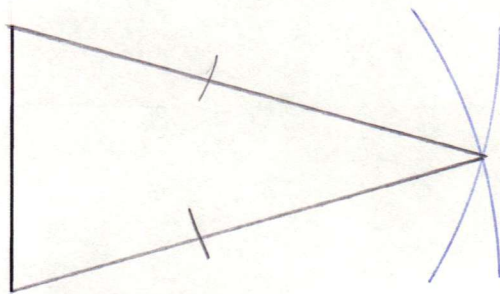
5. Bisect the given line segment to create a perpendicular bisector.



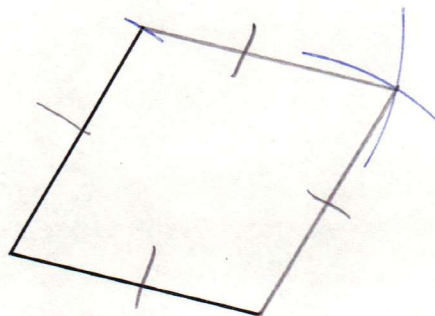
6. Make an equilateral triangle from the given line segment.



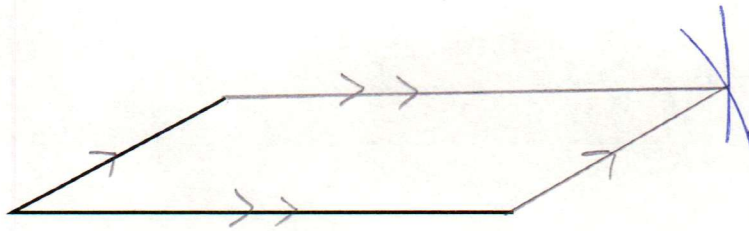
7. Make an isosceles triangle from the given line segment.



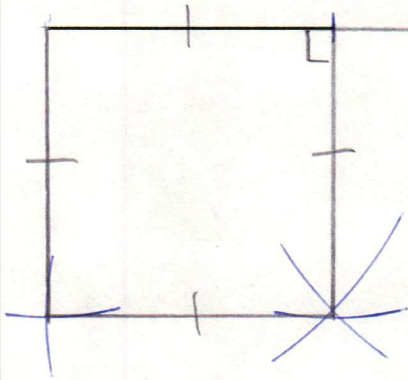
8. Make a rhombus from the given angle.



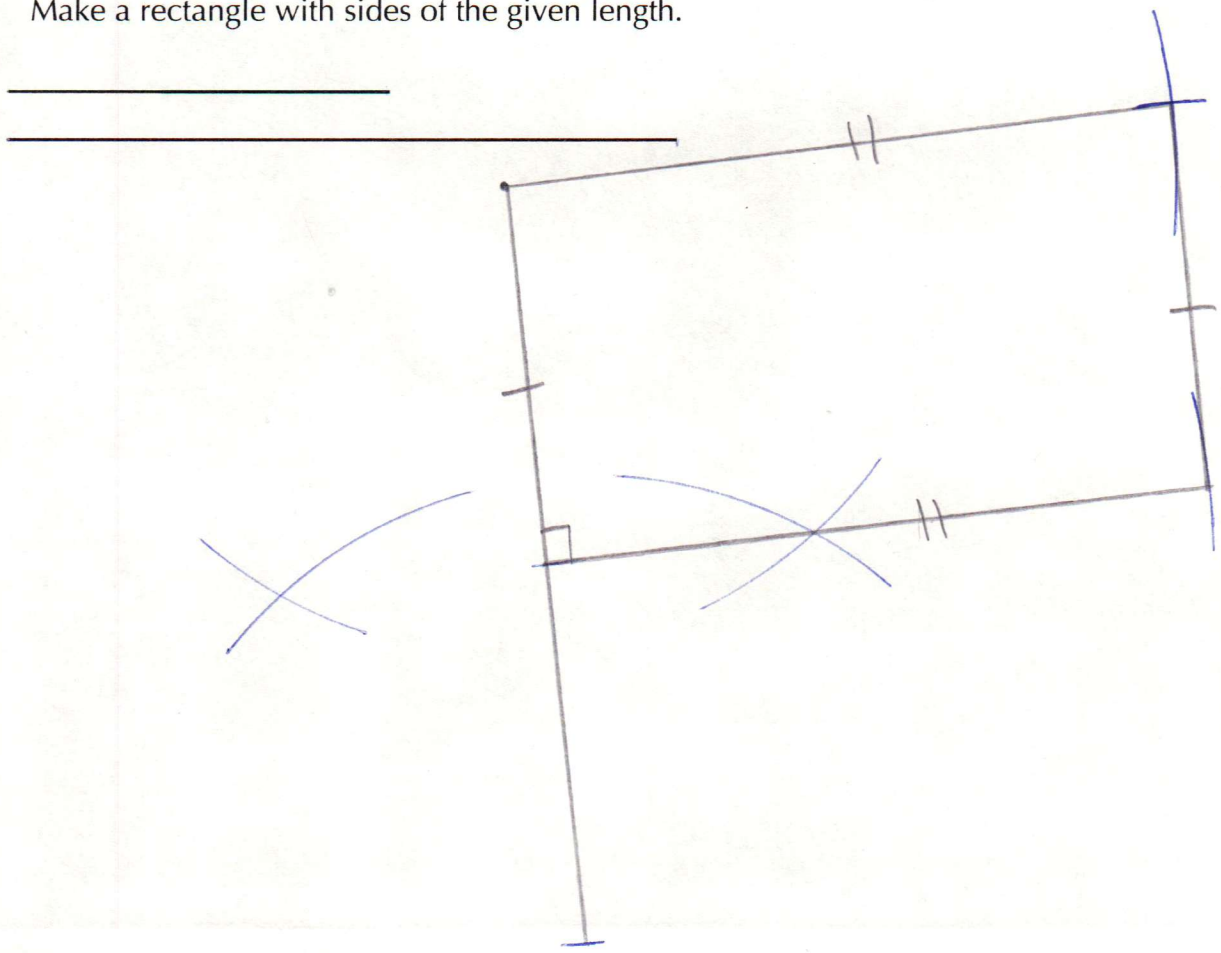
9. Make a parallelogram from the given angle.



10. Make a square with sides of the given length.



11. Make a rectangle with sides of the given length.



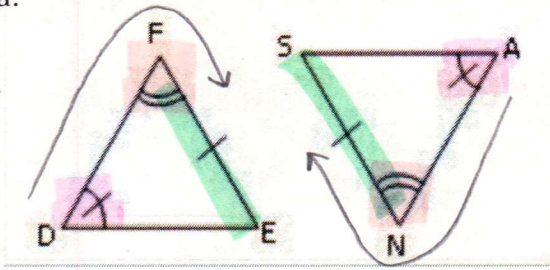
Congruence

12. State the five relationships that prove congruence.

SSS, ASA, SAS, AAS, HL

13. Give a basic proof for each pair of triangles that proves congruence.

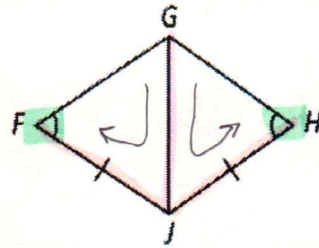
a.



- * $\angle D \cong \angle A$ Angle
- * $\angle F \cong \angle N$ Angle
- * $\overline{FE} \cong \overline{NS}$ Side

So $\triangle DFE \cong \triangle ANS$ by AAS

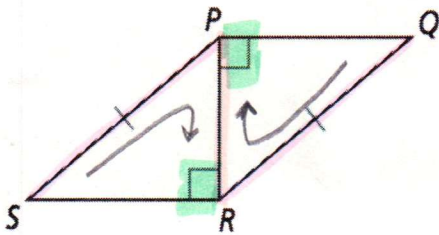
b.



- * $\overline{GJ} \cong \overline{GJ}$ Side
- * $\overline{JF} \cong \overline{JH}$ Side
- * $\angle F \cong \angle H$ Angle

$\triangle GJF$ & $\triangle GJH$ cannot be proved congruent by SSA

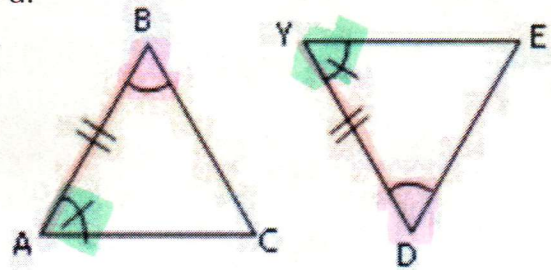
c.



- * $\overline{SP} \cong \overline{QR}$ Hypotenuse
- * $\overline{PR} \cong \overline{PR}$ Leg
- * $\angle RPS$ & $\angle PRQ$ are right angles

So, $\triangle SRP \cong \triangle QRP$ by HL

d.



- * $\angle B \cong \angle D$ Angle
- * $\overline{BA} \cong \overline{DY}$ Side
- * $\angle A \cong \angle Y$ Angle

So, $\triangle ABC \cong \triangle DYE$ by ASA

| Slope | Side Length |
|---|--|
| 2 Sets of Parallel Sides <ul style="list-style-type: none"> ○ Perpendicular Sides <ul style="list-style-type: none"> ◆ Square ◆ Rectangle ○ No Perpendicular Sides <ul style="list-style-type: none"> ◆ Parallelogram ◆ Rhombus | 4 Congruent Sides <ul style="list-style-type: none"> ○ Rhombus ○ Square |
| 1 Set of Parallel Sides <ul style="list-style-type: none"> ○ Trapezoid | 2 Different sets of Congruent Sides <ul style="list-style-type: none"> ○ Kite ○ Rectangle ○ Parallelogram |
| No Parallel Sides <ul style="list-style-type: none"> ○ Kite ○ Quadrilateral | 2 Congruent Sides and 2 Non-Congruent Sides <ul style="list-style-type: none"> ○ Isosceles Trapezoid |
| | No Congruent Sides <ul style="list-style-type: none"> ○ Quadrilateral ○ Trapezoid |

Quadrilaterals

14. Find the distance between each set of points.

a. $(-4, 0)$ and $(3, 12)$

$$d = \sqrt{(-4-3)^2 + (0-12)^2}$$

$$d = \sqrt{(-7)^2 + (-12)^2}$$

$$d = \sqrt{49 + 144} = \boxed{\sqrt{193}}$$

b. $(8, -5)$ and $(-3, -9)$

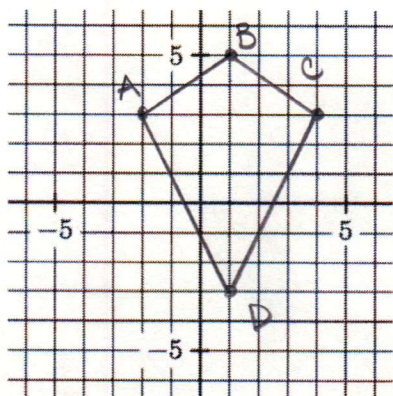
$$d = \sqrt{(8-(-3))^2 + (-5-(-9))^2}$$

$$d = \sqrt{(11)^2 + (4)^2}$$

$$d = \sqrt{121 + 16} = \boxed{\sqrt{137}}$$

15. Classify each quadrilateral, then find the perimeter.

a. $A(-2, 3)$, $B(1, 5)$, $C(4, 3)$, $D(1, -3)$



$$\overline{AB}: m = \frac{2}{3} \quad d = \sqrt{(-2-1)^2 + (3-5)^2} = \sqrt{13}$$

$$\overline{BC}: m = -\frac{2}{3} \quad d = \sqrt{(1-4)^2 + (5-3)^2} = \sqrt{13}$$

$$\overline{CD}: m = 2 \quad d = \sqrt{(4-1)^2 + (3-3)^2} = \sqrt{45}$$

$$\overline{DA}: m = -2 \quad d = \sqrt{(-2-1)^2 + (3-(-3))^2} = \sqrt{45}$$

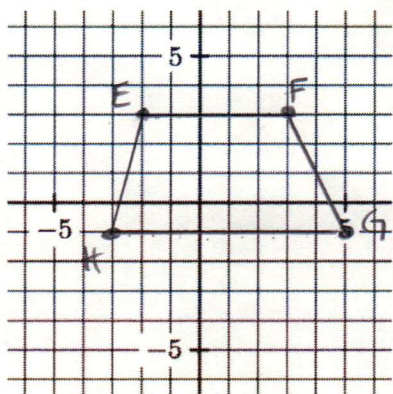
Congruent

Congruent

$$P = 20.63$$

ABCD is a Kite because there are no parallel sides and two sets of congruent sides.

b. E(-2, 3), F(3, 3), G(5, -1), H(-3, -1)



$$P = 21.60$$

$$\overline{EF}: m=0 \quad d=5$$

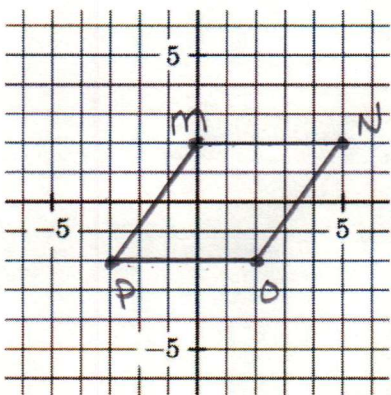
$$\overline{FG}: m=-2 \quad d=\sqrt{(3-5)^2+(3-1)^2}=\sqrt{20}$$

$$\overline{GH}: m=0 \quad d=8$$

$$\overline{HE}: m=4 \quad d=\sqrt{(-2-3)^2+(3-1)^2}=\sqrt{17}$$

EFGH is a trapezoid because there is one set of parallel sides and no congruent sides.

c. M(0, 2), N(5, 2), O(2, -2), P(-3, -2)



$$P = 20$$

$$\overline{MN}: m=0 \quad d=5$$

$$\overline{NO}: m=\frac{4}{3} \quad d=\sqrt{(5-2)^2+(2-2)^2}=\sqrt{25}=5$$

$$\overline{OP}: m=0 \quad d=5$$

$$\overline{PM}: m=\frac{4}{3} \quad d=\sqrt{(0-3)^2+(2-2)^2}=\sqrt{25}=5$$

MNOP is a rhombus because there are 2 sets of parallel (nonperpendicular) sides and all 4 sides are congruent.

16. Give the slope that is perpendicular to the given angle.

a. $m = \frac{2}{3}$

$$\perp m = -\frac{3}{2}$$

b. $m = -3$

$$\perp m = \frac{1}{3}$$

c. $m = 1$

$$\perp m = -1$$