Drawing Geometric Shapes

Name_____

Classwork

Exploratory Challenge

Use a ruler, protractor, and compass to complete the following problems.

1. Draw complementary angles so that one angle is $35°$. Label each angle with its measurement. Are the angles required to be adjacent?

2. Draw vertical angles so that one angle is $125°$. Label each angle formed with its measurement.

3. Draw three distinct segments of lengths $2\ cm$, $4\ cm$, and $6\ cm$. Use your compass to draw three circles, each with a radius of one of the drawn segments. Label each radius with its measurement.

4. Draw three <u>adjacent</u> angles a, b, and c so that $a = 25°$, $b = 90°$, and $c = 50°$. Label each angle with its measurement.

5. Draw a rectangle $ABCD$ so that $AB = CD = 8\ cm$ and $BC = AD = 3\ cm$.

6. Draw a segment AB that is $5\ cm$ in length. Draw a second segment that is longer than $\overline{AB}$, and label one endpoint C. Use your compass to find a point on your second segment, which will be labeled D, so that $CD = AB$.

7. Draw a segment AB with a length of your choice. Use your compass to construct two circles:
   i. A circle with center A and radius AB.
   ii. A circle with center B and radius BA.

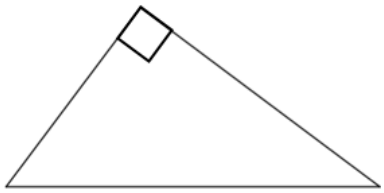
   Describe the construction in a sentence.

8. Draw a horizontal segment AB, $12\ cm$ in length.
   a. Label a point O on $\overline{AB}$ that is $4\ cm$ from B.
   b. Point O will be the vertex of an angle COB.
   c. Draw ray OC so that the ray is above $\overline{AB}$ and $\angle COB = 30°$.
   d. Draw a point P on $\overline{AB}$ that is $4\ cm$ from A.
   e. Point P will be the vertex of an angle QPO.
   f. Draw ray PQ so that the ray is above $\overline{AB}$ and $\angle QPO = 30°$.

9. Draw segment AB of length $4\ cm$. Draw two circles that are the same size, one with center A and one with center B (i.e., do not adjust your compass in between) with a radius of a length that allows the two circles to intersect in two distinct locations. Label the points where the two circles intersect C and D. Join A and C with a segment; join B and C with a segment. Join A and D with a segment; join B and D with a segment.

   What kind of triangles are $\triangle ABC$ and $\triangle ABD$? Justify your response.

10. Determine all possible measurements in the following triangle, and use your tools to create a copy of it.



11. Draw $\triangle ABC$ so that $\angle B$ has a measurement of $100°$.

12. Draw an isosceles $\triangle ABC$. Begin by drawing $\angle A$ with a measurement of $80°$. Use the rays of $\angle A$ as the equal legs of the triangle. Choose a length of your choice for the legs, and use your compass to mark off each leg. Label each marked point with B and C. Label all angle measurements.

13. Draw an isosceles $\triangle DEF$. Begin by drawing a horizontal segment DE that is $6\ cm$ in length. Use your protractor to draw $\angle D$ and $\angle E$ so that the measurements of both angles are $30°$. If the non-horizontal rays of $\angle D$ and $\angle E$ do not already cross, extend each ray until the two rays intersect. Label the point of intersection F. Label all side and angle measurements.

14. Draw rectangle $ABCD$ with $AB = 5\ cm$ and $BC = 7\ cm$.

15. Use a ruler and protractor to draw parallelogram $PQRS$ so that the measurement of $\angle P$ is $65°$, $PQ = 8\ cm$, the measurement of $\angle Q$ is $115°$.

16. Use a ruler, and protractor to draw rhombus $ABCD$ so that the measurement of $\angle A$ is $60°$, and each side of the rhombus measures $5\ cm$.

17. Use the appropriate tools to draw rectangle $FIND$ with $FI = 5\ cm$ and $IN = 10\ cm$.