Lesson 6: Drawing Geometric Shapes

Classwork

Exploratory Challenge

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

1. Use your ruler to draw three segments of the following lengths: cm, cm, and cm. Label each segment with its measurement.

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

3. Draw vertical angles so that one angle is . Label each angle formed with its measurement.

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

5. Draw three adjacent angles , , and so that , , and . Label each angle with its measurement.

6. Draw a rectangle so that cm and cm.

7. Draw a segment that is cm in length. Draw a second segment that is longer than and label *one* endpoint . Use your compass to find a point on your second segment, which will be labeled , so that .

8. Draw a segment with a length of your choice. Use your compass to construct two circles:
   i. A circle with center , and radius .
   ii. A circle with center , and radius .

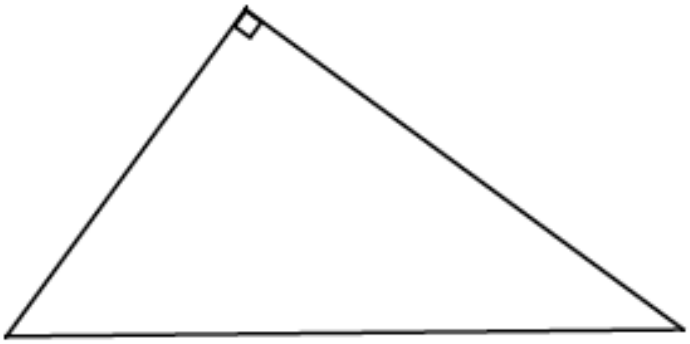
   Describe the construction in a sentence.

9. Draw a horizontal segment cm in length.
   a. Draw a point on that is cm from .
   b. Point will be the vertex of an angle .
   c. Draw ray so that the ray is above and .
   d. Draw a point on that is cm from
   e. Point will be the vertex of an angle .
   f. Draw ray so that the ray is above and .

10. Draw segment of length cm. Draw the same circle from and from (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 and . Join and with a segment; join and with a segment. Join and with a segment; join and with a segment.

    What kind of triangles are and ? Justify your response.

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



Problem Set

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

1. Draw a segment that is cm in length, perpendicular to segment , cm in length.

2. Draw supplementary angles so that one angle is . Label each angle with its measurement.

3. Draw triangle so that has a measurement of .

4. Draw a segment that is cm in length. Draw a circle with center and radius . Draw a circle with diameter .

5. Draw an isosceles triangle . Begin by drawing with a measurement of . Use the rays of 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 and . Label all angle measurements.

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

7. Draw a segment that is cm in length. Draw a circle with center and a circle with center so that the circles are not the same size, but do intersect in two distinct locations. Label one of these intersections . Join to and to to form .

8. Draw an isosceles trapezoid with two equal base angles and that each measure . Use your compass to create the two equal sides of the trapezoid. Leave arc marks as evidence of the use of your compass. Label all angle measurements. Explain how you constructed the trapezoid.