

Draw and carefully label the figures. Use the appropriate marks to indicate right angles, parallel lines, congruent segments, and congruent angles. Use a protractor and a ruler when you need to.

1) Acute angle DOG with a measure of 45°

5) $\overline{PE} \perp \overline{AR}$

2) Right angle RTE

6) Vertical angles ABC and DBE

3) Obtuse angle BIG with angle bisector \overline{IE}

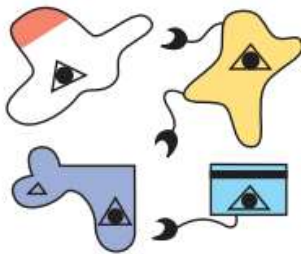
7) Complementary angles $\angle A$ and $\angle B$ with $m\angle A = 40^\circ$

4) $\overline{DG} \parallel \overline{MS}$

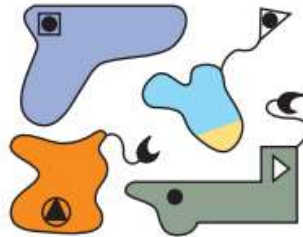
8) Supplementary angles $\angle C$ and $\angle D$ with $m\angle D = 40^\circ$

Complete.

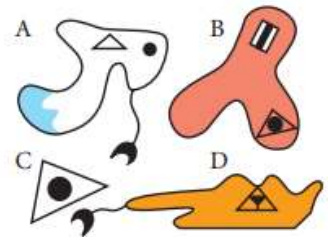
9) Which creatures in the last group are Zoids? What makes a Zoid a Zoid?



Zoids



Not Zoids



Which are Zoids?

10) What is the difference between complementary and supplementary angles?

11) If $\angle X$ and $\angle Y$ are supplementary angles, are they necessarily a linear pair? Why or why not?

12) There is something wrong with this definition for a pair of vertical angles: "If \overleftrightarrow{AB} and \overleftrightarrow{CD} intersect at point P , then $\angle APC$ and $\angle BPD$ are a pair of vertical angles." Sketch a counterexample to show why it is not correct.

13) What phrase would you need to add to the statement in #12 in order to make a correct definition?

Four of the following statements are true. Make a sketch for each true statement. For each false statement, draw a counterexample.

14) For every line segment there is exactly one midpoint.

18) In every triangle there is exactly one right angle.

15) For every angle there is exactly one angle bisector.

19) Through a point not on a line, one and only one line can be constructed parallel to the given line.

16) If two different lines intersect, then they intersect at one and only one point.

20) If $CA = AT$, then A is the midpoint of \overline{CT} .

17) If two different circles intersect, then they intersect at one and only one point.

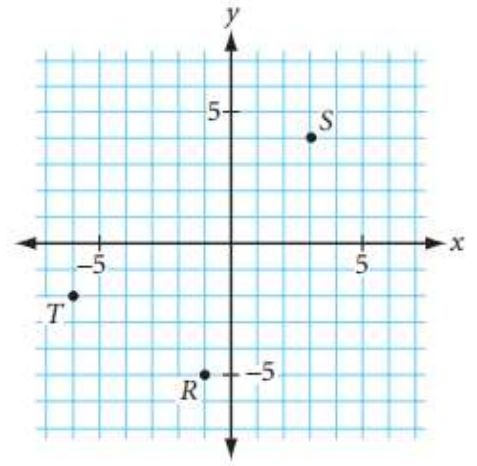
21) If $m\angle D = 40^\circ$ and $m\angle C = 140^\circ$, then angles C and D are a linear pair.

22) If point A is not the midpoint of \overline{CT} , then $CA \neq AT$.

Use the graph to place the points.

23) Place point P so that that points P, T, and S are collinear.

24) Place point Q so that $\overrightarrow{QR} \parallel \overrightarrow{TS}$.



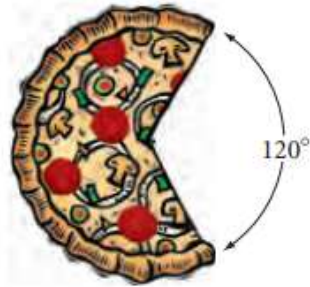
Complete.

25) If D is the midpoint of \overline{AC} and C is the midpoint of \overline{AB} , and $AD = 3$ cm, what is the length of \overline{AB} ?

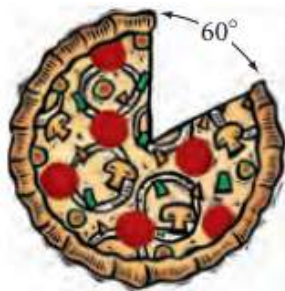
26) If \overline{BD} is the angle bisector of $\angle ABC$, \overline{BE} is the angle bisector of $\angle ABD$, and $m\angle DBC = 24^\circ$, what is $m\angle EBC$?

27) Each pizza is cut into slices from the center.

- a. What fraction of the pizza is left?



- b. What fraction of the pizza is missing?



- c. If the pizza is cut into nine equal slices, how many degrees is each angle at the center of the pizza?

