NAME _____ DATE _____ PERIOD ____

2-1 Skills Practice

Inductive Reasoning and Conjecture

Make a conjecture about the next item in each sequence.

1. 

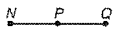
2. $-4, -1, 2, 5, 8$ **11**

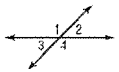
3. $6, \frac{11}{2}, 5, \frac{9}{2}, 4$ $\frac{7}{2}$

4. $-2, 4, -8, 16, -32$ **64**

Make a conjecture based on the given information. Draw a figure to illustrate your conjecture. 5–8. Sample answers are given.

5. Points A, B, and C are collinear, and D is between B and C.
   A, B, C, and D are collinear.
   

6. Point P is the midpoint of $\overline{NQ}$.
   NP = PQ
   

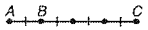
7. $\angle 1$, $\angle 2$, $\angle 3$, and $\angle 4$ form four linear pairs.
   $\angle 1$, $\angle 2$, $\angle 3$, and $\angle 4$ are formed by two intersecting lines.
   

8. $\angle 3 \cong \angle 4$
   $\angle 3$ and $\angle 4$ are vertical angles.
   

Determine whether each conjecture is *true* or *false*. Give a counterexample for any false conjecture.

9. Given: $\angle ABC$ and $\angle CBD$ form a linear pair.
   Conjecture: $\angle ABC \cong \angle CBD$
   False; one of the angles could be acute and the other obtuse.

10. Given: $\overline{AB}$, $\overline{BC}$, and $\overline{AC}$ are congruent.
    Conjecture: A, B, and C are collinear.
    False; $\overline{AB}$, $\overline{BC}$, and $\overline{AC}$ could form a triangle.

11. Given: $AB + BC = AC$
    Conjecture: $AB = BC$
    false; counterexample: 

12. Given: $\angle 1$ is complementary to $\angle 2$, and $\angle 1$ is complementary to $\angle 3$.
    Conjecture: $\angle 2 \cong \angle 3$
    true

Lesson 2-1

NAME _____ DATE _____ PERIOD ____

2-1 Practice (Average)

Inductive Reasoning and Conjecture

Make a conjecture about the next item in each sequence.

1. 

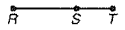
2. $5, -10, 15, -20$ **25**

3. $-2, 1, -\frac{1}{2}, \frac{1}{4}, -\frac{1}{8}$ $\frac{1}{16}$

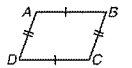
4. $12, 6, 3, 1.5, 0.75$ **0.375**

Make a conjecture based on the given information. Draw a figure to illustrate your conjecture. 5–8. Sample answers are given.

5. $\angle ABC$ is a right angle.
   $\overrightarrow{BA} \perp \overrightarrow{BC}$
   

6. Point S is between R and T.
   RS + ST = RT
   

7. P, Q, R, and S are noncollinear and $\overline{PQ} \cong \overline{QR} \cong \overline{RS} \cong \overline{SP}$.
   The segments form a square.
   

8. $ABCD$ is a parallelogram.
   AB = CD and BC = AD.
   

Determine whether each conjecture is true or false. Give a counterexample for any false conjecture.

9. Given: S, T, and U are collinear and $ST = TU$.
   Conjecture: T is the midpoint of $\overline{SU}$.
   true

10. Given: $\angle 1$ and $\angle 2$ are adjacent angles.
    Conjecture: $\angle 1$ and $\angle 2$ form a linear pair.
    False; $\angle 1$ and $\angle 2$ could each measure 60°.

11. Given: $\overline{GH}$ and $\overline{JK}$ form a right angle and intersect at P.
    Conjecture: $\overline{GH} \perp \overline{JK}$
    true

12. **ALLERGIES** Each spring, Rachel starts sneezing when the pear trees on her street blossom. She reasons that she is allergic to pear trees. Find a counterexample to Rachel's conjecture.
    Sample answer: Rachel could be allergic to other types of plants that blossom when the pear trees blossom.

Answers