Name _____

1-3B Lesson Master

Questions on SPUR Objectives
See pages 60–63 for objectives.

SKILLS Objectives B, C

In 1–3, consider three instances of the pattern below:

$$-\sqrt{1^2} = -1 \qquad\qquad -\sqrt{2^2} = -2 \qquad\qquad -\sqrt{3^2} = -3$$

1. Describe the pattern using one variable. _____

2. Find another number that is an instance of this pattern.

   _____

3. Find a number that is a counterexample to this pattern.

   _____

4. Using the table, evaluate each expression for 4 different values of the variable.

n	$n^2 - n - 2$	$n^2 - 2n - 1$

   Use your results to determine whether the expression $n^2 - n - 2$ appears to be equivalent to the expression $n^2 - 2n - 1$ and explain your reasoning.

   _____

   _____

In 5–8, refer to 3 instances of the pattern that is made with circles and line segments.

5. Draw the fourth instance of the pattern.

6. How many circles and how many line segments will there be in the 10th instance? _____

7. How many circles are needed to make the nth design? _____

8. Describe the pattern of line segments using the variable n to represent the number of circles. _____

Name _____

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SKILLS Objectives B, C

In 9–12, use the picture of the beaded necklace that Diane is creating. The picture shows what the necklace looks like after she works on it for one, two, and three minutes.

1 minute ~~◯◯◯●~~

2 minutes ~~◯◯◯●◯◯◯●~~

3 minutes ~~◯◯◯●◯◯◯●◯◯◯●~~

9. Draw what the necklace looks like after the 4th minute if Diane keeps working at the same rate.

10. How many white beads and black beads will   _____
    the necklace have after 10 minutes at this rate?

                                                        _____

11. Write an expression for the number of black beads
    the necklace will have after n minutes at this rate.   _____

12. Write an expression for the number of white beads the
    necklace will have after n minutes at this rate.   _____

13. Yaron is tying together pieces of rope for a game of tug-of-war.
    He ties a double knot (counted as two knots) to connect two pieces
    of rope. Figure out how many knots he ties, based on how many
    pieces of rope he has.

Pieces of rope	Knots
1	0
2	2
3	4
4	
5	
6	

a. Complete the chart and describe the pattern of
   knots using the variable r to represent the number
   of pieces of rope.   _____

b. How many knots will Yaron tie if he has 11 pieces
   of rope?   _____