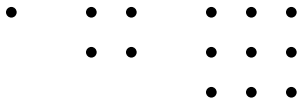
Name _____ Date _____

LESSON 2.1

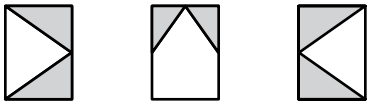
Practice B

For use with pages 74–80

Sketch the next figure in the pattern.

1. 

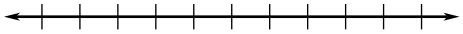
2. 

3. 

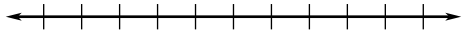
4. 

Describe a pattern in the numbers. Write the next number in the pattern. Graph the pattern on a number line.

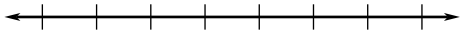
5. 113, 224, 335, 446, . . .



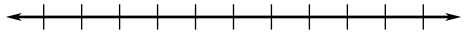
6. 4, 6, 9, 13, 18, . . .



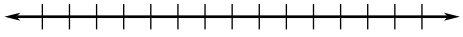
7. $\frac{1}{3}, \frac{3}{4}, \frac{5}{5}, \frac{7}{6}, \ldots$



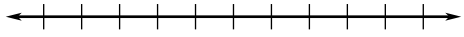
8. $\frac{7}{8}, \frac{6}{7}, \frac{5}{6}, \frac{4}{5}, \ldots$



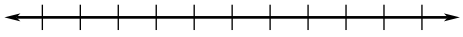
9. 3, 0, −3, −6, . . .



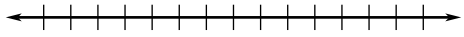
10. 1, 4, 9, 16, . . .



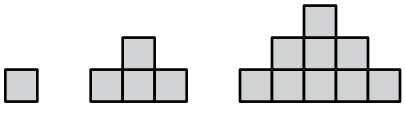
11. 2, 5, 11, 23, . . .

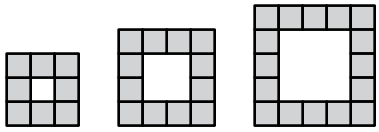


12. 2, 3, 5, 7, 11, . . .



The first three objects in a pattern are shown. How many squares are in the next object?

13. 

14. 

Name _____ Date _____

LESSON 2.1

Practice B *continued*

For use with pages 74–80

Show the conjecture is false by finding a counterexample.

15. The quotient of two whole numbers is a whole number.

16. The difference of the absolute value of two numbers is positive, meaning $|a| - |b| > 0$.

17. If $m \neq -1$, then $\frac{m}{m+1} < 1$.

18. The square root of a number x is always less than x.

Write a function rule relating *x* and *y*.

19.

x	1	2	3
y	1	8	27

20.

x	1	2	3
y	−5	−3	−1

21.

x	1	2	3
y	4	3	2

22.

x	1	2	4
y	1	0.5	0.25

23. **Bacteria Growth** Suppose you are studying bacteria in biology class. The table shows the number of bacteria after n doubling periods. Your teacher asks you to predict the number of bacteria after 7 doubling periods. What would your prediction be?

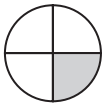
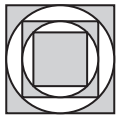
***n* (periods)**	0	1	2	3	4	5
billions of bacteria	4	8	16	32	64	128

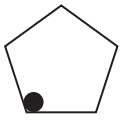
24. **Chemistry** The half-life of an isotope is the amount of time it takes for half of the isotope to decay. Suppose you begin with 25 grams of Platinum-191, which has a half-life of 3 days. How many days will it take before there is less than 1 gram of the isotope?

Lesson 2.1

Practice Level A

1.  **2.**  **3.** 

4.  **5.**  **6.** 

7.  **8.** 9 **9.** 15

10. add 5 to previous term; 25 **11.** subtract 3 from previous term; 11 **12.** multiply previous term by 3; 162 **13.** divide previous term by 2; 2

14. add 4 to previous term; 4 **15.** multiply previous term by -3; 243 **16.** an odd integer

17.

3, 5	5, 7	7, 9	9, 11
$\frac{3+5}{2}$	$\frac{5+7}{2}$	$\frac{7+9}{2}$	$\frac{9+11}{2}$
4	6	8	10

the even number between the consecutive odd numbers.

18. *Sample answer:* $\frac{2+4}{2} = 3$, 3 is not even.

19. *Sample answer:*  is not a square.

20. *Sample answer:* 0^2 is not a positive integer.

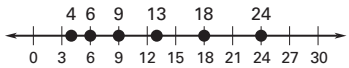
21. a. 114 mm **b.** conjecture: The rate of change of depth of a body of water is not affected by the surface area.

Practice Level B

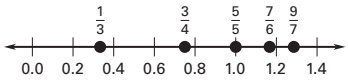
1.  **2.**  **3.**  **4.** 

5. add 111 to each term; 557

6. add consecutive integers to each term, starting with 2; 24

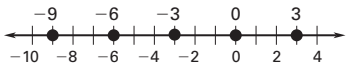


7. add 2 to the numerator and 1 to the denominator; $\frac{9}{7}$

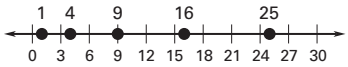


8. subtract 1 from the numerator and 1 from the denominator; $\frac{3}{4}$

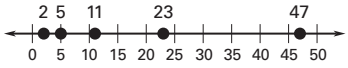
9. subtract 3 from each term; -9



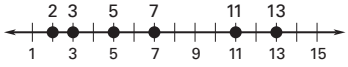
10. square numbers; 25



11. double the number and add 1; 47



12. prime numbers; 13



13. 16 **14.** 20 **15.** *Sample answer:* $\frac{2}{4} = 0.5$

16. *Sample answer:* $|5| - |7| = -2$

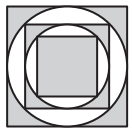
17. *Sample answer:* $\frac{-2}{-2+1} = 2$

18. *Sample answer:* $\sqrt{\frac{1}{4}} = \frac{1}{2}, \frac{1}{2} > \frac{1}{4}$

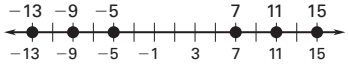
19. $y = x^3$ **20.** $y = 2x - 7$ **21.** $y = -x + 5$

22. $y = \frac{1}{x}$ **23.** 512 billion bacteria **24.** 15 days

Practice Level C

1.  **2.** 

3. add 2 to the absolute value of the previous number and use the opposite sign; 15;



4. subtract n from the previous (nth) number; 7;