

Data 2: Sequences and Patterns

Long-Term Memory Review – Grade 8

Review 1



Word Bank: use these words to fill in the blanks for Question 1. Words may be used once, more than once, or not at all.

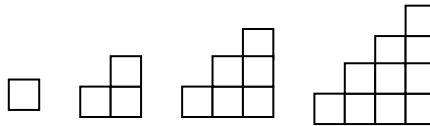
sequence *series* *factor* *term* *equation* *expression*

1. A(n) _____ is a set of numbers or objects written in a specific order, usually according to a mathematical rule or pattern. Each one of the separate numbers or objects is called a(n) _____ .

2. Fill in the missing number in the following pattern:

21, 24, 27, 30, _____ , 36, 39, . . .

3. Draw the next picture in the pattern:



4. Match each verbal description in the left column with its mathematical expression in the right column. Fill in the blank with the correct expression.

a) The product of a number and -23 : _____ $-23 + n$

b) The sum of -23 and a number: _____ $-23 - n$

c) The quotient of a number and -23 : _____ $-23n$

d) The difference of -23 and a number: _____ $\frac{n}{-23}$

5. The table below shows the relationship between the variables x and y . Based on the table, which equation describes the relation?

x	y
1	5
2	7
3	9
4	11

A. $y = x + 4$

B. $y = 5x$

C. $y = 2x + 3$

D. $y = 3x - 1$

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Review 2



Word Bank: use these words to fill in the blanks for Question 1. Words may be used once, more than once, or not at all.

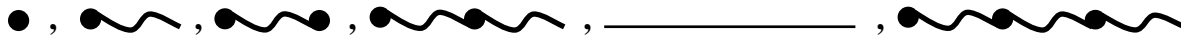
sequence *series* *factor* *term* *equation* *expression*

1. A collection of quantities linked by signs and operations is called a(n) _____. A statement showing that two _____s are equal is called a(n) _____.

2. Find the next three terms in the following sequence;

1, 4, 9, 16, 25, _____, _____, _____

3. Draw the missing figure in the pattern:



4. Which of the following equations is equivalent to the statement, “2 less than the product of a number and 8 is 20”?

A. $2 - 8n = 20$ B. $8n - 2 = 20$ C. $2n - 8 = 20$ D. $n(8 - 2) = 20$

5. Write a verbal description for the following expression: $\frac{n}{8} + 3$

6. The carnival came to town. The cost of the carnival is \$10 for admission plus \$2 for every ride. Complete the table below showing the total cost of going to the carnival for a given number of rides?

<i>Number of rides</i>	0	1	2	3	10	<i>n</i>
<i>Total cost</i>						

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Review 3



Word Bank: use these words to fill in the blanks for Question 1. Words may be used once, more than once, or not at all.

sequence *series* *factor* *term* *equation* *expression*

- 1 A collection of quantities linked by signs and operations is called a(n) _____. A statement showing that two _____s are equal is called a(n) _____. A(n) _____ is a set of numbers or objects written in a specific order, usually according to a mathematical rule or pattern. Each one of the separate numbers or objects is called a(n) _____.
- 2 Find the 7th terms in the sequence; 4, 8, 16, 32, . . .
- 3 Write a rule to find the number of circles in the n^{th} term in the pattern below:



- 4 Which of the following expressions is equivalent to the statement, “nine times the quantity of x less than 2”?
A. $9(x - 2)$ B. $9(x) - 2$ C. $9(2 - x)$ D. $9(2) - x$
- 5 Write a verbal description for the following expression: $10 - 2n = 4$
- 6 It cost 39¢ to mail a one-ounce letter. Each additional ounce cost 24¢. Complete the table below to show the cost of a letter weighting between one and five ounces. Which equation describes the pattern in the table?

<i>Weight (oz)</i>	1	2	3	4	5
<i>Cost (¢)</i>	39	63			

- A. $cost = 24 \times weight - 39¢$ C. $cost = 24 \times weight - 15¢$
B. $cost = 24 \times weight + 39¢$ D. $cost = 24 \times weight + 15¢$

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Day 4 – Review



1. A collection of quantities linked by signs and operations is called a(n) _____. A statement showing that two _____s are equal is called a(n) _____. A(n) _____ is a set of numbers or objects written in a specific order, usually according to a mathematical rule or pattern. Each one of the separate numbers or objects is called a(n) _____.

2. a) Find the 6th terms in the sequence; $\frac{3}{6}, \frac{5}{6}, \frac{7}{6}, \frac{9}{6}, \dots$

b) Write a rule for the n^{th} term.

3. a) How many dots are in the tenth term of the pattern below?



b) Write a rule to find the number of dots in the n^{th} term of the pattern.

4. Which of the following expressions is equivalent to the statement, “a number is multiplied by 6 then 5 is added to the product”?

A. $6n + 5$ B. $6(n + 5)$ C. $n + 6 \times 5$ D. $6n + 5(6n)$

5. Write a verbal description for the following equation: $3(x - 6) = 19$

6. The pressure P (in pounds per square foot) exerted on a scuba diver who is d feet below the surface of the water is shown in the following table

- a) What is the pressure 8 feet?

d	1	2	3	4	5
P	15.1	15.5	15.9	16.3	16.7

- b) Write an equation to find the pressure P at d feet.

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Day 5 – Quiz

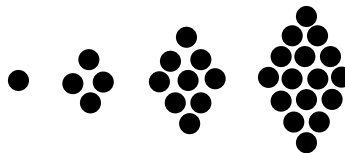


1. A collection of quantities linked by signs and operations is called a(n) _____. A statement showing that two _____s are equal is called a(n) _____. A(n) _____ is a set of numbers or objects written in a specific order, usually according to a mathematical rule or pattern. Each one of the separate numbers or objects is called a(n) _____.

2. Find the 6th terms in the sequence; $1, \frac{2}{3}, \frac{4}{9}, \text{---}, \frac{16}{81}, \dots$

3. a) Find the 8th term in the sequence: $1, 4, 7, 10, \dots$

b) Write a rule for the n^{th} term.



4. a) How many dots are in the tenth term of the pattern: ?

b) Write a rule to find the number of dots in the n^{th} term of the pattern.

5. Which of the following equations is equivalent to the statement, “when 3 is subtracted from twice a number, the result is 15”?

A. $2 \times 5 - n = 15$

B. $2(n - 3) = 15$

C. $2n - 3 = 15$

D. $3 - 2n = 15$

6. Write a verbal description for the following expression: $6 - \frac{n}{15}$

7. The carnival is back in town. This time, admission costs \$5 and each ride costs \$2. Complete the table below showing the total cost of admission and rides? Which equation relates the total cost C based on the number of rides r ?

<i>Number of rides</i>	0	1	2	3	4	r
<i>Total Cost</i>						C

A. $C = r + 6$

B. $C = 5r - 1$

C. $C = 3r + 1$

D. $C = 2r + 5$

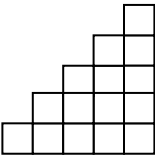
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Answers

DAY 1- Answers

1. Sequence ; term 2. 33 3.  4. a) $-23n$ b) $-23 + n$ c) $\frac{n}{-23}$ d) $-23 - n$
 5. C. $y = 2x + 3$

Day 2- Answers

1. Expression; expression ; equation 2. 36, 49, 64 3.  4. B. $8n - 2 = 20$
 5. (Answers may vary) the quotient of a number and 8 increased by 3
 6.

<i>Number of rides</i>	0	1	2	3	10	n
<i>Total cost</i>	\$10	\$12	\$14	\$16	\$30	$2n + 10$

Day 3- Answers

1. Expression; expression; equation; sequence; term 2. 256 3. $2(n - 1) + 3$ or $2n + 1$
 4. C. $9(2 - x)$ 5. (answers may vary) Twice a number, n , less than ten is four
 6. D. $\text{cost} = 24 \times \text{weight} + 15¢$

<i>Weight (oz.)</i>	1	2	3	4	5
<i>Cost (¢)</i>	39	63	87	111	135

Day 4- Answers

1. Expression; expression; equation; sequence; term
 2. a) $\frac{13}{6}$ 3. a) 19 b) $2n - 1$ 4. A. $6n + 5$
 5. (answers may vary) Three times the quantity six less than a number x is nineteen.
 6. a) 17.9 lbs./ft² b) $15.1 + 0.4(n - 1)$ or $14.7 + 0.4n$

Day 5- Answers

1. Expression; expression; equation; sequence; term 2. $\frac{8}{27}$ 3. a) 22 b) $3n - 2$ 4. a) 100 b) n^2
 5. C. $2n - 3 = 15$ 6. (answers may vary) six less the quotient of a number, n , and fifteen.
 7. D. $C = 2r + 15$

<i>Number of rides</i>	0	1	2	3	4	r
<i>Total Cost</i>	5	7	9	11	13	C