

Warm up - identify the property

$$(3 + 4) + 5 = 5 + (3 + 4) \text{ Commutative}$$

$$5(x - 6) = 5x - 30 \text{ Distributive}$$

$$2 + x = x + 2 \text{ Com. } \text{back } \frac{28}{28}$$

$$3x(0) = 0 \text{ Zero}$$

$$\frac{1}{3} \times 3 = 1 \text{ Inverse } \times$$

$$x + (y + z) = (x + y) + z \text{ Associative}$$

Arithmetic

Add

3, 5, 7, 9...

Common Difference 2

$n+2$

12, 8, 4, 0

$n+(-4)$

Geometric

multiply

4, 8, 16, 32...

Common Ratio

$2n$

$n^2 \rightarrow (2n)$

### What is Bright and Asks a Lot of Questions?

For each exercise, write a pattern of numbers, then find the LAST number you write in one of the boxes at the bottom of the page. Write the exercise letter in that box.

Write the next three numbers in each pattern.

D. 1, 3, 5, 7, 9, 11, 13

H. 15, 30, 45, 60, 75, 90, 105

B.  $\frac{1}{2}$ ,  $\frac{2}{3}$ ,  $\frac{3}{4}$ ,  $\frac{4}{5}$ ,  $\frac{5}{6}$ ,  $\frac{6}{7}$ ,  $\frac{7}{8}$

E.  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ,  $\frac{1}{16}$ ,  $\frac{1}{32}$ ,  $\frac{1}{64}$ ,  $\frac{1}{128}$

U. 2,  $3\frac{1}{2}$ , 5,  $6\frac{1}{2}$ , 8,  $9\frac{1}{2}$ , 11

A. 1, 3, 6, 10, 15, 21, 28

A. 100, 81, 64, 49, 36, 25, 16

U. 1, 3, 9, 27, 81, 243, 729

D. 1000, 100, 10, 1, .1, .01, .001

H. 1,  $\frac{1}{4}$ ,  $\frac{1}{16}$ ,  $\frac{1}{64}$ ,  $\frac{1}{256}$ ,  $\frac{1}{1024}$ ,  $\frac{1}{4096}$

The figures shown below are made with toothpicks. Draw the next two figures in each pattern. Then count the number of toothpicks needed for each figure.



Solve.

N. Antonio has \$80 in his savings account. He plans to add \$32 each month for the next 6 months. How much will Antonio have in his account at the end of each month? \$272

L. There was already 14 in. of snow on the ground when the blizzard started. Each hour for the next 8 hours, 2.5 in. of snow fell. How much snow was on the ground at the end of each hour? 34 in

W. Altus is climbing 3000 ft to the top of a mountain. The temperature was 60°F when he started, but he expects it to drop 3.6° with each 1000 ft of elevation gain. Find the expected temperature after each 1000-ft gain. 49.2

16	36 in.	$\frac{1}{4096}$	11	\$272	13	26	$\frac{1}{128}$	0.001	\$284	49.2°F	105	28	21	$\frac{1}{512}$	20	729	34 in.	$\frac{7}{8}$
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Name:		Date:	
Topic:		Class:	
Main Ideas/Questions	Notes/Examples		
Order of Operations	order that we follow when simplifying expressions.		
	P	parenthesis	
	E	exponents	
	MD	multiply & divide left to right	
	AS	add subtract left to right	
Examples	Directions: Evaluate each expression.		
	1. $7 + 54 \div 3(2)$	2. $24 - 4^2 \cdot 3 + 15$	
	3. $9^2 + 28 \div 4 -  -18 $	4. $48 \div (2^5 - 29) + 6^2$	
	5. $(9-5)^3 - (18-6 \cdot 2)$    58	6. $7 - (53 - 3^4) \div \sqrt{16}$    $(53-81) \div \sqrt{16}$ 7   $-28 \div \sqrt{16}$ $-28 \div 4$ 7   $-7$	

1.  $7 + 54 \div 3(2)$

$$\begin{array}{r} 7 + 54 \div 3(2) \\ 7 + 18(2) \\ 7 + 36 \\ \hline 43 \end{array}$$

Place railroad tracks  
around add subtract  
only.

$$\begin{array}{l} 2. \quad 24 - 4^2 \cdot 3 + 15 \\ \quad \quad \quad 16 \cdot 3 \\ 24 - 48 + 15 \\ \hline -24 + 15 \\ \quad \quad (-9) \end{array}$$

$$3. 9^2 + 28 \div 4 - |-18|$$

$$81 + 7 - 18$$

$$88 - 18$$

$$(70)$$

$$9^2 = 9 \cdot 9$$

$$|-18|$$

$$|18|$$

$$\begin{array}{l} 4. \quad 48 \div (2^5 - 29) + 6^2 \\ 48 \div (32 - 29) \\ 48 \div 3 \\ 16 \qquad \qquad \qquad + \qquad 36 \\ \hline \textcircled{52} \end{array}$$

Only place  
railroad tracks  
around + or -  
outside parenthesis

$$2^5 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$$

$$2y^x 5 =$$



**5.**  $(9 - 5)^3 - (18 - 6 \cdot 2)$

**6.**  $7 + (53 - 3^4) \div \sqrt{16}$

	<p>7. <math>(9-2)^2 -  3-17  + 4</math></p>	<p>8. <math>\sqrt{29-2^2} \cdot (11-8)^2 - 26</math></p>
	<p>9. <math>\frac{18-4^3+25}{28-5^2}</math></p>	<p>10. <math>\frac{4^2 \cdot 6 - 3 \cdot 6}{11 - 25 \div 5}</math></p>
	<p>11. <math>\frac{2^7 - (5-2)^3 + 3}{12 - 7 \cdot 2}</math></p>	<p>12. <math> -34  \cdot \left(\frac{4^2-6}{3-8}\right)</math>  <math>\frac{16-6}{3-8}</math>  <math>\frac{10}{-5}</math>  <math>34 \div \frac{10}{-5}</math>  <math>34 \div -2</math>  <math>(-17)</math></p>
<p><math>\left(\frac{2}{3}\right)^2</math></p>	<p>13. <math>\frac{1}{3} \cdot \frac{7}{6} \cdot \frac{9}{14} + \left(\frac{2}{3}\right)^2</math></p>	<p>14. <math>-\frac{3}{10} \div 6 \cdot \frac{4}{5} + \frac{1}{8}</math></p>

$\frac{2}{3} \cdot \frac{2}{3}$

$\frac{4}{9}$

$\frac{1}{3} \cdot \frac{7}{6} \cdot \frac{9}{14} + \frac{4}{9}$

$-\frac{5}{12} + \frac{4}{9}$

$-\frac{15}{36} + \frac{16}{36}$

$\left(\frac{1}{36}\right)$

$-\frac{3}{10} \div 6 \cdot \frac{4}{5} + \frac{1}{8}$

$-\frac{17}{20} + \frac{1}{8}$

$-\frac{34}{40} + \frac{5}{40}$

$\left(-\frac{29}{40}\right)$

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**7.** 
$$\frac{72 \div 2^3 + 5}{8 - 2 \cdot 5}$$

**8.** 
$$\frac{(17 - 11)^2 - 3^4}{22 \div 2 - 20}$$

**9.** 
$$\frac{8^3 - 4 \cdot 5^3}{(4 - 4 \cdot 15) \div 7}$$

**10.** 
$$\frac{21 + 3^5 \div 9}{75 - (7 + 2)^2}$$

**11.** 
$$\frac{(13 - 3^2)^3 - 8 \cdot 2}{15 - (7 \cdot 2 + 4)} + |-27|$$

**12.** 
$$\frac{5}{4} \cdot \left( \frac{8}{15} + \frac{2}{5} \right) - \left( \frac{1}{2} \right)^2$$

