

Review:

What number is considered the "Additive Identity"? 0

What is the "Additive Inverse" of the number -3? 3

Simplify:  $\left(-\frac{3}{5}\right)^2 - \frac{3}{5} \cdot \frac{5}{9} + \frac{7}{10}$  7(10+5)

$$\frac{6}{6} \cdot \frac{9}{25} - \frac{50}{50} \cdot \frac{1}{3} + \frac{7}{10} \cdot \frac{15}{15} = \frac{54 - 50 + 105}{150}$$

$$= \frac{109}{150}$$

$$109. \quad \frac{1}{2} - \left( \frac{2}{3} \div \frac{5}{9} \right) + \frac{5}{6}$$

$$= \frac{1}{2} - \left( \frac{2}{\cancel{3}} \cdot \frac{\overset{3}{\cancel{9}}}{5} \right) + \frac{5}{6}$$

$$= \frac{1}{2} \cdot \frac{15}{15} - \frac{6}{5} \cdot \frac{6}{6} + \frac{5}{6} \cdot \frac{5}{5}$$

$$= \frac{15 - 36 + 25}{30} = \frac{4}{30}$$

$$= \boxed{\frac{2}{15}}$$

$$\frac{\frac{a}{b}}{\frac{c}{d} + \frac{e}{f}} = \frac{a}{b} \cdot \frac{c}{d}$$

$$= \frac{a}{b} \cdot \frac{d}{c}$$

$$a \quad |$$


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$$| + \frac{1}{| + \frac{1}{| + \frac{1}{| + \frac{1}{2}}}}$$

1.3

Commutativity

$$a+b=b+a \quad ; \quad ab=ba$$

Associativity

$$a+(b+c)=(a+b)+c \quad ; \quad a(bc)=(ab)c$$

Identities

Additive  
Identity

$$0 \quad 0+x=x \quad ; \quad x+0=x$$

Multiplicative  
Identity

$$1 \quad 1 \cdot x = x = 1 \cdot x$$

Inverses

additive  
inverse

$$-x \quad x+(-x)=0=(-x)+x$$

multiplicative  
inverse

$$\frac{1}{x} \quad x \cdot \frac{1}{x} = 1 = \frac{1}{x} \cdot x$$

$x \neq 0$

Distributive Property

$$a(b+c) = ab+ac \quad ; \quad (a+b)c = ac+bc$$

1.3

$$100. \quad 3x - 2 \left[ y - 2(x + 3[2x + 3y]) \right]$$

$$= 3x - 2 \left[ y - 2(x + 6x + 9y) \right]$$

$$= 3x - 2 \left[ y - 2(7x + 9y) \right]$$

$$= 3x - 2 \left[ y - 14x - 18y \right]$$

$$= 3x - 2 \left[ -17y - 14x \right]$$

$$= 3x + 34y + 28x$$

$$= \boxed{31x + 34y}$$

## 1.4 Verbal Expressions & Variable Expressions

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+ more than, added to,  
sum, total, increase by

— less than, difference, minus,  
decrease by

• times, product, multiplied,  
of

÷ divided by, quotient, ratio

$a^n$  exponent, power (squared,  
cubed)

1.4

2. a number decreased by the difference between five and the number.

~~☺ - 5 ☺~~      ☺ - 5 (5 - ☺)

☺ - (5 - ☺)

☺ - 5 + ☺

2☺ - 5

7 - 1  
~~7 - 1~~

8. One-half of (the total of (six times a number~~x~~) and twenty-two)

$$\frac{1}{2} \left( \frac{6x}{1} + \frac{22}{1} \right)$$

$$\frac{1}{2} \cdot \frac{6^3}{1}$$

$$= 3x + 11$$

14. The sum of two numbers is 20.  
 Using  $x$  to represent the smaller #,  
 translate: "the difference between  
 (five times the <sup>20-x</sup> larger number) and  
 (three less than the smaller #)"

$$x + y = 20$$

$$y = 20 - x$$

$$5(20 - x) - (x - 3)$$

$$100 - 5x - x + 3$$

$$103 - 6x$$

1.3 # 38-53,  
 98-103  
 1.4 # 1-14