Ex: (p 56)

If $x = -5$ and $y = -3$, evaluate each expression.

104. $4x + 5y$

$4(-5) + 5(-3) = -20 + (-15)$

$= -35$

110. $\dfrac{2y - 12}{x - 4}$

$\dfrac{2(-3) - 12}{-5 - 4} = \dfrac{-6 + (-12)}{-5 + (-4)}$

$= \dfrac{-18}{-9} = 2$

114. At the end of the third quarter of 2006, General Motors reported a net loss of $115 million. If this continued, what would General Motor's income be after four more quarters? (*Source: General Motors*)

$-115 + 4(-115)$ | $5(-115)$

-575

116. Is -4 a solution of $2x = x - 1$?

$2(-4) \stackrel{?}{=} -4-1$

$-8 \neq -5$ NO!

120. Is -4 a solution of $2x + 4 = x + 8$?

$2(-4)+4 \stackrel{?}{=} -4+8$

$-8+4 \quad -4+8$

$-4 \neq 4$ NO!

Write each of the following as an expression and evaluate.

132. The sum of 1 and the product of -8 and -5

$1 + (-8)(-5) = 1 + 40 = 41$

134. 7 subtracted from the quotient of 0 and 5

$\frac{0}{5} - 7$

$0 - 7 = -7$

Practice Test

6. 135 write as a product of primes.

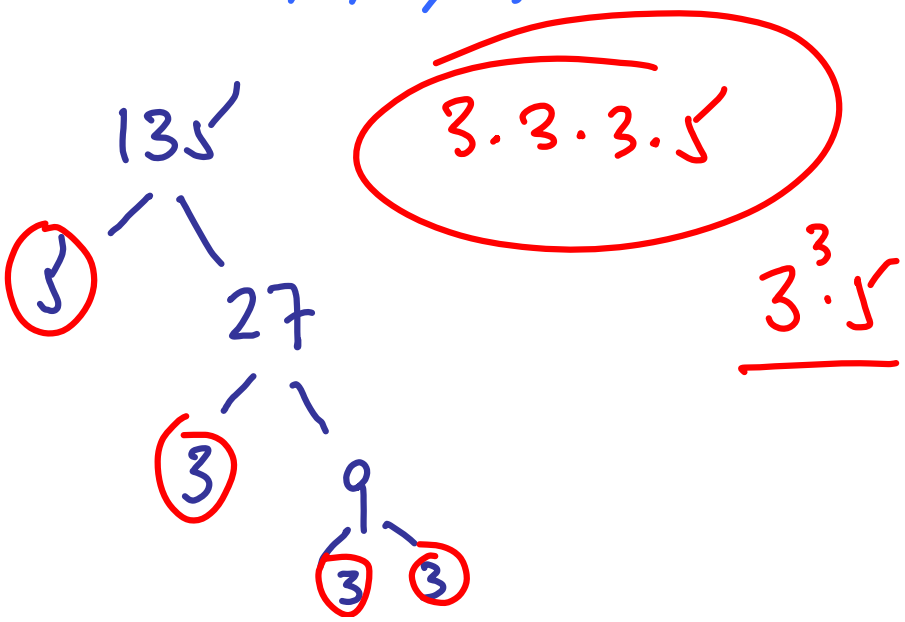
What's a prime number?

A natural number with exactly 2 different divisors: itself & 1.

e.g. 2, 3, 5, 7, 11, ...

Factoring a number. Factors of a number

Ex 12: 3, 4, 6, 2, 1, 12



$$\frac{1}{3} \div \frac{7}{15}$$

$$\frac{\frac{1}{3}}{\frac{7}{15}} = \frac{1}{3} \cdot \frac{15}{7} = \frac{5}{7}$$

$$3\frac{2}{25} \cdot \frac{1}{5} = \frac{77}{25} \cdot \frac{1}{5} = \frac{77}{125}$$

$$\frac{7}{5} - 1 = \frac{7}{5} - \frac{1 \cdot 5}{1 \cdot 5}$$

$$= \frac{7}{5} - \frac{5}{5} = \frac{2}{5}$$

$$-\frac{4}{7}\left[-\frac{1}{9}\right] = +\frac{4}{63}$$

1.8: Properties of Real Numbers

Commutative Properties

Addition:	$a + b = b + a$
Multiplication:	$a \cdot b = b \cdot a$

Associative Properties

Addition:	$(a + b) + c = a + (b + c)$
Multiplication:	$(a \cdot b) \cdot c = a \cdot (b \cdot c)$

Distributive Property of Multiplication Over Addition

$$a(b + c) = ab + ac$$

Identities for Addition and Multiplication

0 is the identity element for addition.

$$a + 0 = a \qquad \text{and} \qquad 0 + a = a$$

1 is the identity element for multiplication.

$$a \cdot 1 = a \qquad \text{and} \qquad 1 \cdot a = a$$

Additive or Multiplicative Inverses

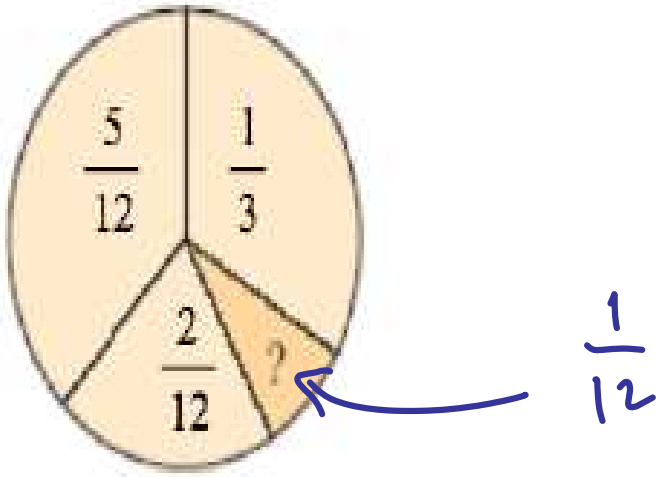
The numbers a and $-a$ are additive inverses or opposites of each other because their sum is 0; that is,

$$a + (-a) = 0$$

The numbers b and $\frac{1}{b}$ (for $b \neq 0$) are reciprocals or multiplicative inverses of each other because their product is 1; that is,

$$b \cdot \frac{1}{b} = 1$$

17. The circle below represents a whole, or 1. Use subtraction to determine the unknown part of the circle.



$$\frac{5}{12} + \frac{2}{12} + \frac{1 \cdot 4}{3 \cdot 4}$$

$$\frac{5}{12} + \frac{2}{12} + \frac{4}{12} = \frac{11}{12}$$

Ex: (p 63)

Simplify

36. $5(7 + 8y)$

38. $3(8x - 1)$

40. $2(x + 5)$

42. $-3(z - y)$

44. $-5(2r + 11)$

52. $-(q - 2 + 6r)$

56. $-\frac{1}{5}(10a - 25b)$

60. $-11(5x + 3) + 10$