

MAT 0020 Basic Algebra II

KEY CONCEPT REVIEW

CHAPTER 2: SECTIONS 2.1 – 2.3

TO RECEIVE CREDIT, DO ALL PROBLEMS, MAKE CORRECTIONS, AND SHOW ALL WORK.

- 1) Is $x = -4$ a solution of the given equation?

$$5x - 2 = 3(x - 10)$$

- 2) What is the addition property of equality? How do you use this property to solve the equation for b ?

$$-9 = b + 18$$

Solve each equation using the addition property.

3) $x + \frac{2}{9} = -\frac{5}{18}$

4) $y - 1.7 = -6.5$

- 5) What steps are needed to solve this equation for x ?

$$4(x - 1) + 3x = 8x$$

Solve each equation.

6) $-6b + 6 + 4b = -3b + 11$

7) $5(y + 8) = 6y + 40$

8) $\frac{2}{3}x + \frac{1}{3} = -\frac{1}{3}x - \frac{1}{5}$

- | | |
|---------------------|--------------------|
| A) $\frac{2}{15}$ | B) $-\frac{8}{15}$ |
| C) $-\frac{41}{75}$ | D) $-\frac{1}{4}$ |

9) $2(x + 3) = 3(x - 8)$

- | | |
|----------|----------|
| A) -18 | B) 27 |
| C) 30 | D) -30 |

Can you find the mistake? What is the correct solution?

10) Solve: $-18.2 = -6.6 + x$

$$-18.2 = -6.6 + x$$

$$-182 = -66 + x$$

$$-182 + 66 = x$$

$$-116 = x$$

Find the missing values. (*Hint: substitute the given values for x .*)

- 11) What value was added to x to give the solution $x = -5$?

$$-29 = \underline{\quad ? \quad} + x$$

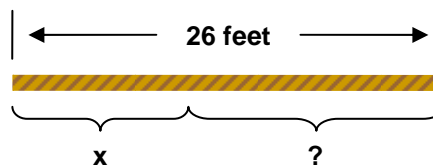
- 12) What value of K makes the given equation equivalent to $x = 3$?

$$6x + 16x - 3 = K + 9$$

Write an algebraic expression.

- 13) Two numbers have a sum of 22. If one number is q , express the other number in terms of q .

- 14) A 26-foot piece of rope is cut into two pieces as shown. If the first piece is x feet long, express the second piece in terms of x .



- 15) Does adding $\frac{2}{3}$ to both sides solve this equation for s ? Explain why or why not.

$$-\frac{2}{3}s = \frac{5}{6}$$

- 16) What is the multiplication property of equality? How do you use this property to solve the equation for a ?

$$\frac{a}{-2} = 15$$

Solve each equation using the multiplication property.

17) $-\frac{3}{2}r = -\frac{27}{4}$

18) $-\frac{2}{5}y = 18$

19) $-6.3 = 0.7d$

- 20) How are the addition and multiplication properties of equality used to solve this equation for x ? Explain.

$$7 - 4x = -21$$

Solve each equation using both properties.

21) $8x - (5x - 1) = 2$

22) $5(2z - 2) = 9(z + 4)$

- A) 26 B) 46
C) -26 D) 31

23) $-6x - 2(3x + 5) = -16 - 6x$

24) $(y - 9) - (y + 4) = 4y$

- A) $-\frac{13}{4}$ B) $-\frac{5}{2}$
C) $-\frac{13}{2}$ D) $-\frac{5}{4}$

- 25) If x represents the first of three consecutive even integers, express the sum of the three integers in terms of x .

- 26) If an equation contains fractions, how do you clear the fractions? Explain.

- 27) If an equation contains decimals, how do you clear the decimals? Explain.

Solve each equation by clearing the fractions or decimals first.

28) $\frac{2x}{5} - \frac{x}{3} = 2$

- A) 60 B) -30
C) -60 D) 30

29) $\frac{1}{2}x + \frac{4}{9} = \frac{4}{9}x$

30) $12.3k + 73.8 = 24.6k + 147.6$

31) $0.04y + 0.11(400 - y) = 0.18y$

- A) 352 B) 110
C) 176 D) 11

32) $\frac{4(7 - x)}{3} = x$

33) $\frac{3(y - 2)}{5} = 1 - 3y$

- A) $-\frac{11}{18}$ B) $\frac{11}{18}$
C) $\frac{7}{6}$ D) $\frac{11}{6}$

- 34) A student solves the equation below as shown. Has the student found the correct solution? Explain why or why not.

Solve: $\frac{1}{3}a - 1 = \frac{3}{5}$

$$\frac{1}{3}a - 1 = \frac{3}{5}$$

$$\left(\frac{5}{15}\right) \frac{1}{3}a - 1 = \frac{3}{5} \left(\frac{15}{15}\right)$$

$$5a - 1 = 9$$

$$5a = 10$$

$$a = 2$$