Algebra 1 Test #1 Review

1. Write an expression that shows "*3 less than x.*"

$$x - 3$$

2. Sarah drives 55 mi/h for *h* hours. Write the expression that shows the *number of miles* that Sarah drove?

$$55h$$

3. Write a correct verbal expression for $9 + n$?

   n more than 9

4. Solve $x - 7 = 25$.

$$x = 32$$

5. Solve $54 = a + 22$.

$$a = 32$$

6. Write an equation that represents the relationship "3 more than a number is 7"?

$$n + 3 = 7$$

7. Solve $-8m = 48$.

$$n = {}^-6$$

8. Solve $\dfrac{h}{7} = 6$.

$$h = 42$$

9. A principal spent $1560 on *c* calculators for her school. Write an expression that shows the cost of one calculator?

$$\frac{\$1560}{c}$$

10. Evaluate $m + n$ for $m = 9$ and $n = 7$.

$$16$$

11. Write an equation that represents the relationship "3 less than a number is –6"?

$$n - 3 = {}^-6$$

12. Solve $\dfrac{2}{3} - \dfrac{3}{7}h = 6.$ $\;{}^{-7}/_3$

$$h = {}^-14$$

13. Juan bought *n* video games. Write an expression to show the total cost of the games if each game cost $16.

$$16n$$

14. Write an equation to represent the relationship "a number decreased by 12 is equal to 9." Then solve the equation.

$$n - 12 = 9$$
$$n = 21$$

15. Write an equation to represent the relationship "the product of 7 and a number is 28." Then solve the equation.

$$7n = 28$$
$$n = 4$$

16. Write an equation to represent the relationship "a number decreased by 11 is equal to –18." Then solve the equation.

$$x - 11 = {}^-18$$
$$x = {}^-7$$

17. Write an equation to represent the relationship "the product of a number and negative 5 is 30." Then solve the equation.

$$n \cdot {}^-5 = 30$$
$$n = {}^-6$$

18. One week, the ratio of pounds of apples to pounds of oranges sold at a market was 3:8. Twelve pounds of apples were sold. How many pounds of oranges were sold? (Proportion)

$$\frac{3}{8}\frac{a}{0} \qquad \frac{3}{8} = \frac{12}{x}$$
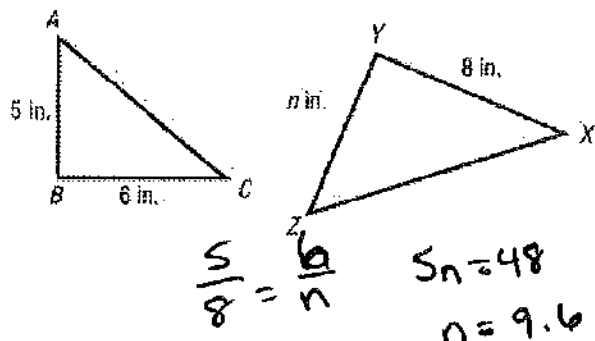$$3x = 96$$
$$x = 32$$

19. Solve $\frac{2}{8} = \frac{3}{m+2}$.

$$2m+4 = 24$$
$$2m = 20$$
$$m = 10$$

20. $\triangle ABC \sim \triangle XYZ$. Find the value of n to the nearest tenth.

$$\frac{5}{8} = \frac{6}{n} \qquad 5n = 48$$
$$n = 9.6$$

21. A 14-foot tree casts an 8-foot shadow. At the same time, a nearby flagpole casts a 10-foot shadow. How tall is the flagpole?

$$\frac{14}{8} = \frac{x}{10}$$
$$140 = 8x$$
$$17.5 = x$$

22. A deer stand casts a shadow 15 feet long at the same time that a 4-foot-tall shrub casts a shadow that is 6 feet long. How tall is the deer stand?

$$\frac{15}{x} = \frac{6}{4} \qquad 60 = 6x$$
$$10 = x$$

23. Solve $\frac{s}{10} = \frac{1}{2}$.

$$2s = 10 \qquad s = 5$$

24. The ratio of the sale price of a textbook to the original price is 1:3. The original price is $81. What is the sale price? (Proportion)

$$\frac{1}{3} = \frac{x}{81}$$
$$27 = x$$

25. A rectangle has a length of 5 cm and a width of 4 cm. Every dimension is tripled to form a similar rectangle. What is the ratio of the perimeters of the two rectangles?

$$\frac{5}{4} = \frac{15}{12} \qquad 1:3$$

26. Shayla is 5 feet tall and casts a shadow 2 feet long. At the same time, a nearby lamppost casts a shadow 8 feet long. Write and solve a proportion to find the height of the lamppost.
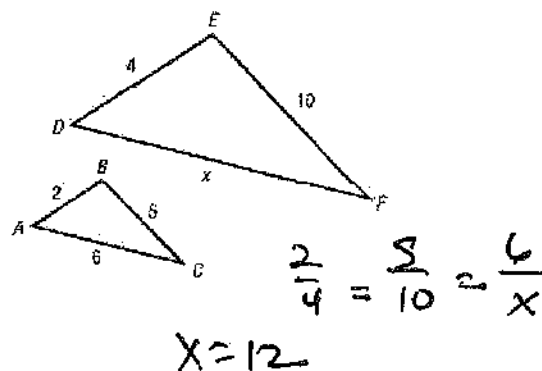
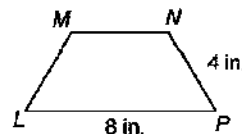$$\frac{5}{2} = \frac{x}{8} \qquad 40 = 2x$$
$$20 = x$$

27. Find the value of x in the diagram. $\triangle ABC \sim \triangle DEF$

$$\frac{2}{4} = \frac{5}{10} = \frac{6}{x}$$
$$x = 12$$

28. Find the value of x in the diagram. $LMNP \sim QRST$

$$\frac{x}{4} = \frac{2}{8} \qquad x = 1$$

Solve each equation.

29. Solve $a = \dfrac{b-4}{c}$ for b.

$ac = b - 4$
$ac + 4 = b$

30. $4(z - 1) + 1 = 21$

$4z - 4 + 1 = 21$
$4z = 24$
$z = 6$

31. $1 = \dfrac{d}{10} - 12$

$\dfrac{d}{10} = 13$
$d = 130$

32. A car detailing company charges $30 plus $18 per hour. Another company charges $25 plus $20 per hour. How long is a job that costs the same no matter which company is used?

$30 + 18x = 25 + 20x$

2.5 hours

33. $12a - 15 = 8a + 1$

$4a = 16$
$a = 4$

34. $3(x + 1) - 1 = 3x + 2$

$3x + 3 - 1 = 3x + 2$
$2 = 2$ all real #

35. Solve $D = \dfrac{M}{V}$ for M.

$DV = m$

36. Solve $x + 6y = 12$ for y.

$12 - x = 6y$

$\dfrac{12-x}{6} = y$

Solve each equation.

37. $32 = 12 + 4(z - 1)$

$32 = 12 + 4z - 4$
$24 = 4z$
$6 = z$

38. $\dfrac{3}{5} = \dfrac{3}{10}d - 12$

$6 = 3d - 120$
$126 = 3d$
$42 = d$

39. A landscaping company charges $100 plus $15 per hour. Another company charges $75 plus $17 per hour. How long is a job that costs the same no matter which company is used?

$100 + 15x = 75 + 17x$
$25 = 2x$
$12.5 = x$

Solve each equation.

40. $12a - 11 = 9a - 1$

$3a = 10$
$a = \dfrac{10}{3}$

41. $5(x + 2) - 7 = 5x + 3$

$5x + 10 - 7 = 5x + 3$
all real #

42. Solve $D = \dfrac{M}{V}$ for V.

$DV = m$
$V = \dfrac{m}{D}$

43. Solve $-8x + 4y = 28$ for y.

$4y = 28 + 8x$
$y = \dfrac{28 + 4x}{4}$ $y = 7 + x$

44. What is the common difference in the arithmetic sequence –3, –1, 1, 3, …?

$$d = 2$$

45. Which of the following is NOT an arithmetic sequence?

A) 1, 2, 3, 4, …   B) $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 1, …$

C) 2, 2.5, 3, 3.5,… D) –2, 4, –6, 8,…

46. What is the 45th term of the arithmetic sequence 58, 61, 64, 67,…?
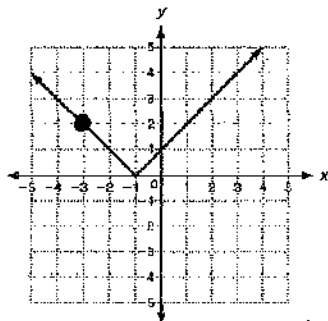
$$a_n = a_1 + (n-1)d$$
$$a_{45} = 58 + (44)3$$
$$a_{45} = 190$$

47. Which of the following is NOT a function?

A) (2, 1), (4, 3), (6, 5), (8, 7)
B) (2, 1), (4, 3), (6, 5), (8, 5)
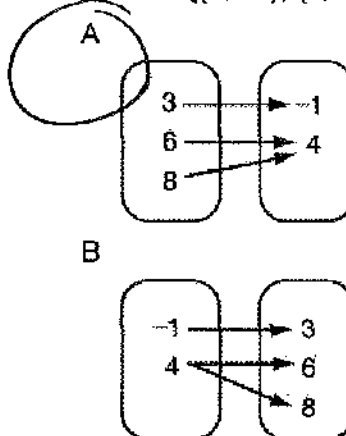C) (2, 1), (4, 3), (6, 5), (2, 7)
D) (2, 1), (4, 1), (6, 5), (8, 7)
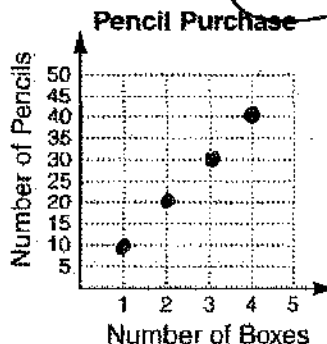
48. What is the value of $f(x)$ when $x = –3$?

$$f(x) = 2$$
$$f(-3) = 2$$

49. Which mapping diagram shows the relation {(3, –1), (6, 4), (8, 4)}?

A

```
3 ───┐  ┌─ –1
6 ───┼──┤
8 ───┘  └─ 4
```

B

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–1 ───┐  ┌─ 3
4  ───┼──┤  6
       └─ 8
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50. A school secretary is buying pencils. The pencils come in boxes of 10. Sketch a graph to show the number of pencils the secretary could buy if she has enough money to buy 1, 2, 3, or 4 boxes. Tell whether the graph is continuous or discrete.

Pencil Purchase

Number of Pencils (vertical axis: 5 10 15 20 25 30 35 40 45 50)
Number of Boxes (horizontal axis: 1 2 3 4 5)

51. Airport parking is available for $8 per day. (Write the described function.)

$$P = 8d \qquad f(d) = 8d$$

52. Evaluate the function $f(x) = 6x - 1$ when $x = 0$ and when $x = 4$.

$$f(4) = 6(4) - 1$$
$$f(0) = 6(0) - 1 = -1 \qquad f(4) = 23$$

53. Identify the independent and dependent variables. # prints   total cost

A photo lab charges $0.15 per print.