

# Unit 6 Test Review

Name \_\_\_\_\_

Date \_\_\_\_\_

Solve each problem showing every step. Graph the inequalities. The problems with \*\* are challenge problems. Try them!

**A** 1)  $b + 10 - 3 = 44 \div 2$

$$\begin{aligned} 1) \quad b + 10 - 3 &= 44 \div 2 \\ b + 7 &= 22 \\ \underline{-7} \quad \underline{-7} & \\ b &= 15 \end{aligned}$$

**A** 2)  $n - 8 = 24$

$$\begin{aligned} 2) \quad n - 8 &= 24 \\ \underline{+8} \quad \underline{+8} & \\ n &= 32 \end{aligned}$$

**A** 3)  $h - 6 = 32$

$$\begin{aligned} 3) \quad h - 6 &= 32 \\ \underline{+6} \quad \underline{+6} & \\ h &= 38 \end{aligned}$$

**A** 4)  $-25 = j + 5$

$$\begin{aligned} 4) \quad -25 &= j + 5 \\ \underline{-5} \quad \underline{-5} & \\ -30 &= j \\ j &= -30 \end{aligned}$$

**A** 5)  $a - (-11) = -14$

$$\begin{aligned} 5) \quad a - (-11) &= -14 \\ a + 11 &= -14 \\ \underline{-11} \quad \underline{-11} & \\ a &= -25 \end{aligned}$$

A) 6)  $-29 + t = -16$

$$\begin{array}{r} 6) -29 + t = -16 \\ +29 \quad +29 \end{array}$$

$t = 13$

B) 7)  $5\frac{1}{3} + g - 2\frac{1}{6} = -9$

$$\begin{array}{r} 7) 5\frac{1}{3} + g - 2\frac{1}{6} = -9 \\ \frac{10}{6} + g = -9 \\ -\frac{10}{6} \quad -\frac{10}{6} \\ \hline g = -\frac{73}{6} = -12\frac{1}{6} \end{array}$$

$\begin{array}{r} 5\frac{1}{3} - 2\frac{1}{6} \\ \frac{10}{6} - \frac{2}{6} \\ \frac{8}{6} - \frac{13}{6} = -\frac{5}{6} \\ -\frac{5}{6} - \frac{19}{6} = -\frac{24}{6} = -4 \end{array}$

A) 8)  $-9 - (-r) = 12$

$$\begin{array}{r} 8) -9 - (-r) = 12 \\ -9 + r = 12 \\ +9 \quad +9 \\ \hline r = 21 \end{array}$$

B) 9)  $-5 = 4s + 6\frac{1}{3}$

$$\begin{array}{r} 9) -5 = 4s + 6\frac{1}{3} \\ -6\frac{1}{3} \quad -6\frac{1}{3} \\ \hline -\frac{34}{3} = 4s \\ \frac{-34}{3} \div 4 = -\frac{34}{12} = -\frac{17}{6} \\ s = -2\frac{5}{6} \end{array}$$

$\begin{array}{r} -5 - 6\frac{1}{3} \\ -5 - \frac{19}{3} = -\frac{15}{3} - \frac{19}{3} \\ -\frac{34}{3} \end{array}$

A) 10)  $\frac{4}{5}y = -72$

$$\begin{array}{r} 10) \frac{4}{5}y = -72 \\ \times \frac{5}{4} \\ \hline y = -90 \end{array}$$

A) 11)  $22 = \frac{r}{36}$

$$\begin{array}{r} 11) 36 \times 22 = \frac{r}{36} \times 36 \\ \hline r = 792 \end{array}$$

A 12)  $-15n = 75$

$$12) \frac{-15n}{-15} = \frac{75}{-15}$$

$$n = -5$$

B 13)  $2v + 47.8 = -18.3$

$$13) \begin{array}{r} 2v + 47.8 = -18.3 \\ - 47.8 \quad -47.8 \\ \hline 2v = -66.1 \\ \frac{2v}{2} = \frac{-66.1}{2} \end{array}$$

$$v = -33.05$$

A 14)  $18 = -\frac{4}{9}m$

$$14) \frac{-9}{4} \times 18 = -\frac{4}{9}m \times \frac{-9}{4}$$

$$m = \frac{-9}{4} \cdot \frac{18}{1} = m = \frac{-81}{2} = -40\frac{1}{2}$$

A 15)  $-3.72y = 5.208$

$$15) \frac{-3.72y}{-3.72} = \frac{5.208}{-3.72}$$

$$y = -1.4$$

A 16)  $\frac{1}{8}t = 19$

$$16) \frac{8}{1} \cdot \frac{1}{8}t = 19 \times \frac{8}{1}$$

$$t = 152$$

A 17)  $\frac{c}{5} = -20$

17)  $\cancel{5} \cdot \frac{c}{\cancel{5}} = -20 \cdot 5$

$c = -100$

B 18)  $\frac{1}{2}f = 17\frac{1}{3}$

18)  $\cancel{2} \cdot \frac{1}{\cancel{2}}f = 17\frac{1}{3} \times 2$

$f = \frac{52}{3} \cdot \frac{2}{1} = \frac{104}{3} = 34\frac{2}{3}$

$f = \frac{104}{3}$  or  $34\frac{2}{3}$

A 19)  $\frac{a}{2} + 3 = 6$

19)  $\frac{a}{2} + \cancel{3} = 6$   
 $\quad \quad \quad \underline{-3} \quad \underline{-3}$

$\cancel{2} \cdot \frac{a}{\cancel{2}} = 3 \times 2$

$a = 6$

B 20)  $\frac{1}{4}b - (-3.5) = 19$

20)  $\frac{1}{4}b - (-3.5) = 19$

$\frac{1}{4}b + \cancel{3.5} = 19.0$   
 $\quad \quad \quad \underline{-3.5} \quad \underline{-3.5}$

$4 \cdot \frac{1}{4}b = 15.5 \cdot 4$

$b = 62$

B 21)  $-11 + \frac{d}{3} = 5$

21)  $\cancel{-11} + \frac{d}{3} = 5$   
 $\quad \quad \quad \underline{+11} \quad \quad \underline{+11}$

$\cancel{3} \cdot \frac{d}{\cancel{3}} = 16 \times 3$

$d = 48$

C \*\* 22)  $-(g-9) + 3g - 8 = 65$

22)  $-(g-9) + 3g - 8 = 65$

$-g + 9 + 3g - 8 = 65$

$2g + \cancel{1} = 65$   
 $\quad \quad \quad \underline{-1} \quad \underline{-1}$

$2g = 64$

$g = 32$

**C** \*\* 23)  $\frac{5(x-3)}{3} = \frac{2}{9}$

23)  $\frac{5(x-3)}{3} = \frac{2}{9}$

$\frac{5x-15}{3} = \frac{2}{9} \cdot \frac{3}{1}$

$5x-15 = \frac{2}{3} + \frac{15}{1} = \frac{2}{3} + \frac{45}{3}$

$\frac{1}{5} \cdot 5x = \frac{47}{3} \cdot \frac{1}{5} = x = \frac{47}{15} \text{ or } 3\frac{2}{15}$

**B** 24)  $\frac{5}{7}e - \frac{2}{3} = 16$

24)  $\frac{5}{7}e - \frac{2}{3} = 16 + \frac{2}{3}$

$\frac{7}{5} \cdot \frac{5}{7}e = \frac{50}{3} + \frac{7}{3}$   $e = \frac{70}{3} = 23\frac{1}{3}$

**C** \*\* 25)  $-12 + 4(7c - 16) = -132$

25)  $-12 + 4(7c - 16) = -132$   
 $-12 + 28c - 64 = -132$   
 $-76 + 28c = -132$

$+76$   $+76$

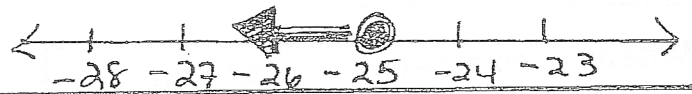
$28c = -56$

$c = -2$

**A** 26)  $x + 7 \leq -18$

26)  $x + 7 \leq -18$

$-7$   $-7$   
 $x \leq -25$



**A** 27)  $30 < 4b - 6$

27)  $30 < 4b - 6$

$+6$   $+6$   
 $36 < 4b$   
 $\frac{4b}{4} > \frac{36}{4}$   $b > 9$

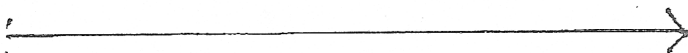


**B** 28)  $\frac{1}{4}(20 + x) \leq 6$

28)  $\frac{1}{4}(20 + x) \leq 6$

$5 + \frac{1}{4}x \leq 6$   
 $-\frac{5}{4} \cdot \frac{1}{4}x \leq 1 \cdot 4$

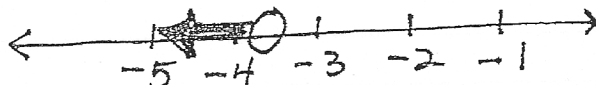
$x \leq 4$



**B** 29)  $-10 > n - 6.13$

29)  $-10 > n - 6.13$   
 $+6.13$                      $+6.13$   
 $-3.87 > n$

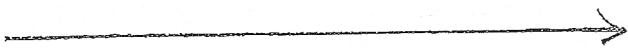
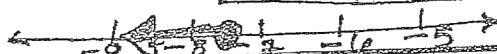
$n < -3.87$



**A** 30)  $\frac{2}{5}w + 7 \leq 4$

30)  $\frac{2}{5}w + 7 \leq 4$   
 $-7$                      $-7$

$\frac{5}{2} \cdot \frac{2}{5}w = -3 + \frac{5}{2}$   
 $w \leq \frac{-15}{2} = -7\frac{1}{2}$



**A** 31)  $6a < 18$

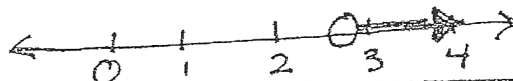
31)  $\frac{6a}{6} < \frac{18}{6}$   
 $a < 3$



**A** 32)  $11k - 9 > 22$

32)  $11k - 9 > 22$   
 $+9$                      $+9$   
 $11k > 31$

$k > \frac{31}{11} = 2\frac{9}{11}$



Write an algebraic expression for each word phrase:

**A** 33) 7 more than a number  $y$

33)  $7 + y$

**A** 34) 6 times the sum of 4 and  $y$

34)  $6(4 + y)$

**A** 35) 11 less than a number

35)  $n - 11$

36) half the sum of  $m$  and 5

$$36) \quad \frac{1}{2}(m+5)$$

**A** 37) 9 more than the product of 6 and a number

$$37) \quad 9 + 6a$$

**B** 38) 6 less than the product of 13 and a number

$$38) \quad 13x - 6$$

**A** 39) 2 less than a number divided by 8

$$39) \quad \frac{x}{8} - 2$$

**A** 40) the quotient of a number and 5

$$40) \quad \frac{n}{5}$$

**A** 41) At the Boston Aquarium there is a fish tank which has ~~73~~ fish in it. There are 3 more than 4 times as many clown fish as goldfish. How many of each type of fish are there?

$$41) \quad \begin{array}{l} \text{Let } x = \text{goldfish} \quad 14 \\ 3 + 4x = \text{Clowns} \quad \boxed{59} \end{array}$$

$$x + 3 + 4x = 73$$

$$5x + 3 = 73$$
$$\begin{array}{r} 5x + 3 = 73 \\ \underline{-3} \quad \underline{-3} \\ 5x = 70 \end{array}$$

$$5x = 70$$

$$\boxed{x = 14 \text{ goldfish}}$$

$$4x + 3 = 4(14) + 3 = 59$$

$$\boxed{59 \text{ clownfish}}$$

- B 42) In the North Pole there are 186 male and female penguins which were tagged. 30 less than 5 times the number of males were tagged than females. How many of each were there?

42)

$$\text{Let } x = \text{females} = 36$$

$$5x - 30 = \text{males} = 150$$

$$x + 5x - 30 = 186$$

$$6x - 30 = 186$$

$$\quad \underline{+30} \quad \underline{+30}$$

$$6x = 216$$

$$x = 36$$

- A 43) The total weight of Sam and his son, Dan, is 250 pounds. Sam's weight is 10 pounds more than 3 times Dan's weight. How much does Dan weigh?

43) Let  $x = \text{Dan's} = 60 \text{ lbs.}$

$$3x + 10 = \text{Sam's}$$

$$x + 3x + 10 = 250$$

$$4x + 10 = 250$$

$$\quad \underline{-10} \quad \underline{-10}$$

$$4x = 240$$

$$x = 60$$

- F 44) Gina and Mary were paid \$126.50 for babysitting over the weekend. Gina made \$18 less than 6 times as much as Mary. How much did each girl make? (round your answers to the nearest cent)

44) Let  $x = \text{Mary} = \$20.64$

$$6x - 18 = \text{Gina} = \$105.86$$

$$7x - 18 = 126.50$$

$$\quad \underline{+18} \quad \underline{+18.00}$$

$$7x = 144.50$$

$$x = 20.64$$



- A 45) Two consecutive numbers have a sum of 99. What are they?

$$45) \text{ Let } x = 1^{\text{st}} \rightarrow 49$$

$$x+1 = 2^{\text{nd}} \rightarrow 50$$

$$x+x+1 = 99$$

$$2x+y = 99$$

$$\underline{-1} \quad \underline{-1}$$

$$2x = 98$$

$$x = 49$$

- B 46) Three consecutive numbers have a sum of 375. What are the numbers?

$$46) \text{ Let } x = 1^{\text{st}} = 124$$

$$x+1 = 2^{\text{nd}} = 125$$

$$x+2 = 3^{\text{rd}} = 126$$

$$x+x+1+x+2 = 375$$

$$3x+3y = 375$$

$$\underline{-3} \quad \underline{-3}$$

$$3x = 372$$

$$x = 124$$

Solve the following multi-step equations.

A 47)  $3y + 7 = -6y - 56$

$$47) 3y + 7 = -6y - 56$$

$$\underline{-3y} \quad \underline{-3y}$$

$$7 = -9y - 56$$

$$\underline{+56} \quad \underline{+56}$$

$$63 = -9y$$

$$\underline{-9} \quad \underline{-9}$$

$$y = -7$$

B 48)  $.8k + 7 = -0.7k + 1$

$$48) .8k + 7 = -0.7k + 1$$

$$\underline{+.7k} \quad \underline{+.7k}$$

$$1.5k + 7 = 1$$

$$\underline{-7} \quad \underline{-7}$$

$$\frac{1.5k}{1.5} = \frac{-6}{1.5}$$

$$k = -4$$