

Equations Test STUDY GUIDE

Name: Key Date: \_\_\_\_\_ Block: \_\_\_\_\_

Solve each equation. SHOW ALL WORK to receive full credit!

1.  $m + 9 = -11$

$$\begin{array}{r} -9 \quad -9 \\ \hline m = -20 \end{array}$$

2.  $\frac{8}{9} + p = \frac{7}{9}$

$$\begin{array}{r} -\frac{8}{9} \quad -\frac{8}{9} \\ \hline p = -\frac{1}{9} \end{array}$$

3.  $\frac{7b}{7} = \frac{-56}{7}$

$$b = -8$$

4.  $w + (+6) = 12$

$$\begin{array}{r} w + 6 = 12 \\ -6 \quad -6 \\ \hline w = 6 \end{array}$$

5.  $-7 \cdot 5 \cdot \frac{h}{-7} = 14 \cdot -7$

$$h = -98$$

6.  $c - 8.4 = -6.3$

$$\begin{array}{r} +8.4 \quad +8.4 \\ \hline c = 2.1 \end{array}$$

7.  $3\frac{3}{4}g = 10$

$$\begin{array}{r} 3\frac{3}{4} \quad 3\frac{3}{4} \\ \hline g = 2\frac{2}{3} \end{array}$$

8.  $-4n = -48$

$$\begin{array}{r} -4 \quad -4 \\ \hline n = 12 \end{array}$$

9.  $3.8y - 1.8y = 3.5$

$$\begin{array}{r} 2y = 3.5 \\ 2 \quad 2 \\ \hline y = 1.75 \end{array}$$

10.  $5h + 6 = 51$

$$\begin{array}{r} -6 \quad -6 \\ \hline 5h = 45 \\ 5 \quad 5 \\ \hline h = 9 \end{array}$$

11.  $2g - 4 - 7g = -39$

$$\begin{array}{r} -5g - 4 = -39 \\ +4 \quad +4 \\ \hline -5g = -35 \\ -5 \quad -5 \\ \hline g = 7 \end{array}$$

12.  $\frac{3}{7}y + 9 = -12$

$$\begin{array}{r} -9 \quad -9 \\ \hline \frac{7}{3} \cdot \frac{3}{7}y = -21 \cdot \frac{7}{3} \\ \hline y = -49 \end{array}$$

13.  $\frac{2}{3}x + 8\frac{2}{3} = -24$

$$\begin{array}{r} -8\frac{2}{3} \quad -8\frac{2}{3} \\ \hline \frac{2}{3}x = -32\frac{2}{3} \\ \frac{2}{3} \quad \frac{2}{3} \end{array}$$

OR mult. both sides by  $\frac{3}{2}$

$$x = -49$$

14.  $-7(x - 12) = 140$

$$\begin{array}{r} -7x + 84 = 140 \\ -84 \quad -84 \\ \hline -7x = 56 \\ -7 \quad -7 \\ \hline x = -8 \end{array}$$

15.  $6(x + 9) - 8 = 28$

$$\begin{array}{r} 6x + 54 - 8 = 28 \\ 6x + 46 = 28 \\ -46 \quad -46 \\ \hline 6x = -18 \\ 6 \quad 6 \\ \hline x = -3 \end{array}$$

16.  $10 = 5 - 8(20z - 5)$

$$\begin{array}{r} 10 = 5 - 16z + 4 \\ 10 = -16z + 9 \\ -9 \quad -9 \\ \hline 1 = -16z \\ -16 \quad -16 \\ \hline z = -\frac{1}{16} \end{array}$$

17.  $\frac{t+12}{-6} = 7 \cdot -6$

$$\begin{array}{r} t + 12 = -42 \\ -12 \quad -12 \\ \hline t = -54 \end{array}$$

18.  $6(3 - 4a) - 8(3 - 4a) = 50$

$$\begin{array}{r} 18 - 24a - 24 + 32a = 50 \\ \text{CLT } 8a - 6 = 50 \\ +6 \quad +6 \\ \hline 8a = 56 \\ 8 \quad 8 \\ \hline a = 7 \end{array}$$

For Exercises 19-23, write an equation. Then solve the equation.

Equations written with the variable already isolated will not be accepted. NO:  $x = 24 - 14$  YES:  $x + 14 = 24$

19. **FUND RAISER** Julie sold 8 times as many tubs of cookie dough for the school fund raiser as Sally. Julie sold 40 tubs of cookie dough. Write and solve an equation to find how many tubs Sally sold.

Equation:  $40 = 8s$  Solution: 5 tubs

$s = \#$  of tubs sold by Sally

$$\frac{40}{8} = \frac{8s}{8} \quad s = 5$$

20. **CALORIES** A granola bar has 130 calories less than a bag of chips. If a granola bar has 180 calories, how many calories are in a bag of chips? Write and solve an equation to find how many calories are in a bag of chips.

Equation:  $180 = c - 130$  Solution: 310 calories

$c = \#$  of calories in bag of chips

$$\begin{array}{r} 180 = c - 130 \\ +130 \quad +130 \\ \hline 310 = c \end{array}$$

21. **GOLF** It costs \$18 to attend a golf clinic with a local pro. Buckets of balls for practice during the clinic cost \$4 each. How many buckets can you buy at the clinic if you have \$42 to spend?

Equation:  $42 = 18 + 4b$  Solution: 6 buckets

$b =$  Cost per bucket

$$\begin{array}{r} 42 = 18 + 4b \\ -18 \quad -18 \\ \hline 24 = 4b \\ \frac{24}{4} = \frac{4b}{4} \\ 6 = b \end{array}$$

22. **VOLUNTEERS** At a local shelter, 96 people volunteered to help prepare meals for the homeless for the holidays. If this represented  $\frac{5}{12}$  of the volunteers at the shelter, write and solve an equation to determine how many volunteers helped at the local shelter.

Equation:  $96 = \frac{5}{12}v$  Solution:  $230 \frac{2}{5}$  people ;

$v =$  total # of volunteers

$$\frac{96}{5/12} = \frac{5/12 v}{5/12} \quad v = 230 \frac{2}{5} \text{ (This question had a mistake)}$$

23. **SUPPLIES** Tony spent \$32.29 and bought 5 packs of notebooks and a calculator. How much does a pack of notebooks cost if a calculator costs \$10.89?

Equation:  $32.29 = 5n + 10.89$  Solution: \$4.28

$n =$  cost per notebook

$$\begin{array}{r} 32.29 = 5n + 10.89 \\ -10.89 \quad -10.89 \\ \hline 21.4 = 5n \\ \frac{21.4}{5} = \frac{5n}{5} \end{array}$$

24.) Select all equations that have  $n = -8$  as a solution. If  $n \neq -8$ , find the correction solution.

a.)  $2 + n = -6$   $2 + -8 = -6$  ✓

b.)  $4n = 32$   $4(-8) \neq 32$

c.)  $3n + 6 = -30$

$n = -12$

d.)  $-3n = 24$   
 $-3(-8) = 24$  ✓

e.)  $\frac{1}{2}n = 4$   
 $n = 8$

f.)  $-8 + n = 0$   
 $3(-8) + 6 \neq 30$

$\frac{1}{2}(-8) \neq 4$   
 $n = 8$

$-8 + -8 \neq 0$   
 $n = 8$

25.) Four high school students are working on a Math 1 problem to find the solution to  $841 = (4x - 7)^2$ . Each student got a different answer. The four answers were 7, 9, 11 and 13.

a) Which of these numbers make the equation true? 9

b) How do you know?

When plugged in for  $x$  it made the equation true.  
 $(4(9) - 7)^2 = (36 - 7)^2 = 29^2 = 841$  ✓

26.) The 6<sup>th</sup> grade math teachers are going on a 3-day trip to a math workshop which includes a team building party at the end of the 3<sup>rd</sup> day. The trip costs \$103.50 for each person. Included in that price is \$15 for a ticket to the team building party and the cost of a pass for each day of the workshop.

a) Write and solve an equation representing the cost of the trip.  $103.50 = 15 + 3p$

$P = \text{cost of pass per day}$

$$\begin{array}{r} 3p + 15 = 103.50 \\ -15 \quad -15 \\ \hline 3p = 88.50 \end{array}$$

$$\frac{3p}{3} = \frac{88.50}{3} \quad p = 29.50$$

b) How much did a pass for one day of the workshop cost? \$29.50

27.) Ronaldo is  $x$  years old. Sophia is twice as old as Ronaldo. Together their ages equal 27 years. Which of the following equations can be used to find Ronaldo's age?

A.  $2x = 27$

B.  $x + 2 = 27$

C.  $x + 2x = 27$

D.  $2x + 2x = 27$

E.  $x + x + 2 = 27$

Ronaldo:  $x$

Sophia:  $2x$

$$x + 2x = 27$$

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

$$x = 9$$

What is Ronaldo's age? 9