



Jakarta International

School

8<sup>th</sup> Grade - AGI

Practice Test - Green

Unit 1: Solving Linear Equations

Name: Answers

Date: \_\_\_\_\_

Score: 25

Goal 2: Use problem solving processes and skills to solve real world problems.

Clearly show required work and follow direction to earn full credit!!!

For each problem, complete the 4 step problem solving process. (4 points per problem - 1 point for each step)

1. Define a variable expression for all unknowns
2. Write an equation for the situation
3. Find the solution and write your answer in a meaningful way
4. Check your solution with the facts from the problems

Demonstrate your skill at applying the 4-step problem solving process by solving the following word problems. Show all steps and work.

1. Twenty more than four times a number is equal to eight times the number. Find the number.

Let  $x$  be the number

$$4x + 20 = 8x$$

$$4x - 8x = -20$$

$$-4x = -20$$

$$-4 \quad -4$$

$$x = 5$$

Check:  $4x + 20 = 8x$

$$4(5) + 20 = 8(5)$$

$$40 = 40 \checkmark$$

The number is 5

2. Jennifer is 5 years younger than Amanda. If the sum of their ages is 51, how old is each of them?

Let  $x$  be Jennifer's age.

∴  $x + 5$  is Amanda's age

$$x + x + 5 = 51$$

$$2x + 5 = 51$$

$$2x = 46$$

$$x = 23$$

Check:

$$x + x + 5 = 51$$

$$(23) + (23) + 5 = 51$$

$$51 = 51 \checkmark$$

Jennifer is 23 years old

Amanda is  $23 + 5 = 28$  years old

(4)

3. The length of a rectangle is 5 more than twice the width. If the perimeter is 40, find the length and width of the rectangle.

Let  $x$  be the width

∴  $2x + 5$  is the length

$$2(L + W) = P$$

$$2(2x + 5 + x) = 40$$

$$2(3x + 5) = 40$$

$$6x + 10 = 40$$

$$6x = 30$$

$$6 \quad 6$$

$$x = 5$$

Check

The width is  $x = 5$  units

The length is  $2x + 5 = 2(5) + 5 = 15$  units

(4)

4. The sum of 3 consecutive odd integers is -9. What are the three integers?

Let  $x$  be the first consecutive odd integer

∴  $x + 2$  is the second and  $x + 4$  is the third

$$x + x + 2 + x + 4 = -9$$

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

$$-15 + 6 = -9$$

$$-9 = -9 \checkmark$$

$$x + x + 2 + x + 4 = -9$$

$$3x + 6 = -9$$

$$\frac{3x}{3} = \frac{-15}{3}$$

$$x = -5$$

(4)

The three numbers are  $-5, -3, -1$

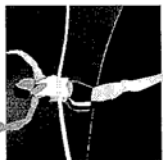
and #  $\frac{x+2}{-5+2} = -3$

3rd number  $x+4 = -5+4 = -1$

(2)

7. In gym class you run  $2\frac{1}{4}$  miles on the track. One lap is  $\frac{3}{4}$  mile. How many laps did you run?

Let  $x$  be the no. of laps run



$$\frac{3}{4}x = 2\frac{1}{4}$$
$$\left(\frac{4}{3}\right)\left(\frac{3}{4}x\right) = \frac{9}{4}\left(\frac{4}{3}\right)$$

$$x = 3$$

No of laps run is 3

5. Two cars travel the same distance. The first car travels at a rate of 50 miles per hour and reaches its destination in 7 hours. The second car travels at a rate of 60 miles per hour and reaches its destination 2 hours earlier than the first car. How long does it take for first car to reach its destination?

Let  $t$  represent the hours taken for 1st car to reach destination  
 $\therefore (t-2)$  represents the hours taken for 2nd car.

$$50t = 60(t-2)$$
$$50t - 60t = 60t - 120 - 60t$$

$$\frac{-10t}{-10} = \frac{-120}{-10}$$

$$t = 12 \text{ hours}$$

It takes the first car 12 hours.



(3)

6. A leopard running 70 feet per second is 120 feet behind the cheetah running 50 feet per second. How long will it take the leopard to catch up to the gazelle?

Let  $x$  be the time taken for the leopard to catch up.

$$70x = 120 + 50x$$

$$70x - 50x = 120 + 50x - 50x$$

$$\frac{20x}{20} = \frac{120}{20}$$

$$x = 6$$

It takes 6 seconds for the leopard to catch up to the gazelle.

(2)



(1)

8. A plumber charges \$5 per service call plus \$30 an hour plus the cost of the parts used. The total bill for a recent job was \$200. If the parts for this job cost \$75 and  $x$  represents the number of hours worked, which equation below can be used to model this problem. You do not need to rewrite the answer. Circle/High light your answer.

A.  $5 + 30 + 75x = 200$

B.  $5 + 30x + 75 = 200$

C.  $5 + 30 + x + 75 = 200$

D.  $5x + 30 + 75 = 200$

(1)

9. Your school band needs to buy new percussion equipment. The equipment will cost \$3000. You have collected \$600 in previous fundraisers. If you sell sandwiches at \$3 each, how many sandwiches will you need to raise the remaining funds?



Let  $x$  be the number of sandwiches you need to sell

$$300 + 600 = 3000$$

$$300 = 3000 - 600$$

$$\frac{300}{3} = \frac{2400}{3}$$

$$x = 800$$

You need to sell 800 sandwiches.

(2)