

Name: \_\_\_\_\_

Class: \_\_\_\_\_

## Equations and Inequalities Day Two: Equation Word Problems

### Question 1

A gardener is planting two types of trees:

Type A is three feet tall and grows at a rate of 15 inches per year.

Type B is 7 yards tall and grows at a rate of 8 inches per year.

To the nearest year, algebraically determine how long it will take for Type A to become taller than Type B. In feet, how tall will each tree be at that time?

### Question 2

A parking garage charges a base rate of \$3.50 for up to 2 hours, and an hourly rate for each additional hour. The sign below gives the prices for up to 5 hours of parking.

Parking Rates	
2 hours	\$3.50
3 hours	\$9.00
4 hours	\$14.50
5 hours	\$20.00

- Create and solve an equation that can be used to find the additional hourly parking rate.
- Find the additional hourly parking rate.

### Question 3

Kim has four more nickels than dimes in her pocket, for a total of \$1.25.

- Create an equation that can be used to determine the number of dimes,  $x$ , in her pocket.
- Determine the number of dimes that Kim has.

#### Question 4

Donna wants to make trail mix made up of almonds, walnuts, and raisins. She wants to mix one part almonds, two parts walnuts, and three parts raisins. Almonds cost \$12 per pound, walnuts cost \$9 per pound, and raisins cost \$5 per pound. Donna has \$15 to spend on the trail mix.

- (a) Create an equation that can be used to determine how many pounds of trail mix she can make.
- (b) Find how many pounds of trail mix she can make.

#### Question 5

Mario paid \$44.25 in taxi fare from the hotel to the airport. The cab charged \$2.25 for the first mile plus \$3.50 for each additional mile.

- (a) Create an equation that can be used to find the total number of miles between the hotel and the airport.
- (b) Algebraically determine the total number of miles from the hotel to the airport.

#### Question 6

Every month, Omar buys pizzas to serve at a party for his friends. In May, he bought three more than twice the number of pizzas he bought in April.

- (a) If Omar bought 15 pizzas in May, create an equation that can be used to find the number of pizzas he bought in April.
- (b) Algebraically determine the number of pizzas he bought in April.

#### Question 7

Sara's telephone service costs \$21 per month plus \$0.25 for each local call, and long-distance calls are extra. Last month, Sara's bill was \$36.64, and it included \$6.14 in long-distance charges.

- (a) Create an equation that can be used to find the number of *local* calls she made.
- (b) Algebraically determine the number of local calls she made.

## Additional Questions

8.

A typical cell phone plan has a fixed base fee that includes a certain amount of data and an overage charge for data use beyond the plan. A cell phone plan charges a base fee of \$62 and an overage charge of \$30 per gigabyte of data that exceed 2 gigabytes. If  $C$  represents the cost and  $g$  represents the total number of gigabytes of data, which equation could represent this plan when more than 2 gigabytes are used?

- 1)  $C = 30 + 62(2 - g)$
- 2)  $C = 30 + 62(g - 2)$
- 3)  $C = 62 + 30(2 - g)$
- 4)  $C = 62 + 30(g - 2)$

10.

Sandy programmed a website's checkout process with an equation to calculate the amount customers will be charged when they download songs. The website offers a discount. If one song is bought at the full price of \$1.29, then each additional song is \$.99. State an equation that represents the cost,  $C$ , when  $s$  songs are downloaded. Sandy figured she would be charged \$52.77 for 52 songs. Is this the correct amount? Justify your answer.

9.

The table below represents the number of hours a student worked and the amount of money the student earned.

Number of Hours ( $h$ )	Dollars Earned ( $d$ )
8	\$50.00
15	\$93.75
19	\$118.75
30	\$187.50

Write an equation that represents the number of dollars,  $d$ , earned in terms of the number of hours,  $h$ , worked. Using this equation, determine the number of dollars the student would earn for working 40 hours.

11.

Ian is borrowing \$1000 from his parents to buy a notebook computer. He plans to pay them back at the rate of \$60 per month. Ken is borrowing \$600 from his parents to purchase a snowboard. He plans to pay his parents back at the rate of \$20 per month. Write an equation that can be used to determine after how many months the boys will owe the same amount. Determine algebraically and state in how many months the two boys will owe the same amount. State the amount they will owe at this time. Ian claims that he will have his loan paid off 6 months after he and Ken owe the same amount. Determine and state if Ian is correct. Explain your reasoning.

12.

Kendal bought  $x$  boxes of cookies to bring to a party. Each box contains 12 cookies. She decides to keep two boxes for herself. She brings 60 cookies to the party. Which equation can be used to find the number of boxes,  $x$ , Kendal bought?

- 1)  $2x - 12 = 60$
- 2)  $12x - 2 = 60$
- 3)  $12x - 24 = 60$
- 4)  $24 - 12x = 60$

14.

Rhonda has \$1.35 in nickels and dimes in her pocket. If she has six more dimes than nickels, which equation can be used to determine  $x$ , the number of nickels she has?

- 1)  $0.05(x + 6) + 0.10x = 1.35$
- 2)  $0.05x + 0.10(x + 6) = 1.35$
- 3)  $0.05 + 0.10(6x) = 1.35$
- 4)  $0.15(x + 6) = 1.35$

16.

If  $n$  is an odd integer, which equation can be used to find three consecutive odd integers whose sum is  $-3$ ?

- 1)  $n + (n + 1) + (n + 3) = -3$
- 2)  $n + (n + 1) + (n + 2) = -3$
- 3)  $n + (n + 2) + (n + 4) = -3$
- 4)  $n + (n + 2) + (n + 3) = -3$

18.

The sum of three consecutive odd integers is 18 less than five times the middle number. Find the three integers. [Only an algebraic solution can receive full credit.]

13.

The width of a rectangle is 4 less than half the length. If  $\ell$  represents the length, which equation could be used to find the width,  $w$ ?

- 1)  $w = \frac{1}{2}(4 - \ell)$
- 2)  $w = \frac{1}{2}(\ell - 4)$
- 3)  $w = \frac{1}{2}\ell - 4$
- 4)  $w = 4 - \frac{1}{2}\ell$

15.

The width of a rectangle is 3 less than twice the length,  $x$ . If the area of the rectangle is 43 square feet, which equation can be used to find the length, in feet?

- 1)  $2x(x - 3) = 43$
- 2)  $x(3 - 2x) = 43$
- 3)  $2x + 2(2x - 3) = 43$
- 4)  $x(2x - 3) = 43$

17.

The ages of three brothers are consecutive even integers. Three times the age of the youngest brother exceeds the oldest brother's age by 48 years. What is the age of the youngest brother?

- 1) 14
- 2) 18
- 3) 22
- 4) 26