Writing Equations (2015)

Name Key 2015

A) Benny heads out on a car trip driving steadily at 55 miles per hour. Complete the table below showing how far he will go driving different amounts of time.

Hours driven	Calculation	Distance traveled
5	$55(5)$	275
12	$55(12)$	660
x	$55(x)$	y

B) At Bauerville SuperStore, it costs $25 to become a member. After that, you pay $3 for each e-book you rent. Complete the table below showing how much different customers would pay to rent different numbers of e-books, including the membership fee.

Videos rented	Calculation	Total cost
Customer A – 3 e-books	$25+3(3)$	34
Customer B – 5 e-books	$25+3(5)$	40
x	$25+3(x)$	y

C) A certain snowman (Frosty, to be precise) is 87 inches tall, but he starts to shrink 1.5 inches every hour when the sun comes out. Complete the table below showing how tall Snowflake will be after various amounts of time have passed from the time the sun came out.

Time passed (hours)	Calculation	Frosty's height (in.)
4	$87-1.5(4)$	81
10	$87-1.5(10)$	72
x	$87-1.5(x)$	y

D. Bob's Well Drilling Company charges $350 to come to a well site and $20 per foot to drill a well. Calculate the total cost of having a well drilled to the following depths.

Depth of well (ft.)	Calculation	Cost ($)
50	$350+20(50)$	1350
70	$350+20(70)$	1750
x	$350+20(x)$	y

D2) Let f = depth of well (in feet) and c = cost. Write an equation for finding c from f.

$C = 350 + 20f$ or $y = 350 + 20x$

D3) Use the equation from part ~~B~~ to figure out how deep a well is if it cost $2,210 to have it drilled.

$2210 = 350 + 20f$

$-350 \quad -350$

$\frac{1860}{20} = \frac{20f}{20}$

$f = 93$ ft

D4) Use the equation to figure out how much it will cost to drill a well that is 410 ft deep.

$C = 350 + 20(410)$

$= 350 + 8200$

$C = \$8550$

E. Sherry's Taxi Service charges $5.35 immediately upon entering the taxi. Then they charge $1.80 for each mile traveled. Calculate the total cost of taking the taxi for the following distances.

Distance (miles)	Calculation	Cost ($)
10	$5.35 + 1.80(10)$	23.35
15	$5.35 + 1.80(15)$	32.35
x	$5.35 + 1.80(x)$	y

E2) Let m = number of miles traveled and c = cost. Write an equation for finding c from m.

$C = 5.35 + 1.80(m)$ or $y = 5.35 + 1.80x$

E3) Use the equation from part B to figure out how far your ride was if it cost $53.95

$53.95 = 5.35 + 1.80m$

$-5.35 \quad -5.35$

$48.60 = 1.80x$

$\frac{48.60}{1.80} = \frac{1.80x}{1.80}$

$27 = x$ 27 miles

E4) Use the equation from part B to figure out how much it will cost to ride 18.7 mi.

$C = 5.35 + 1.80(18.7)$

$= 5.35 + 33.66$

$C = \$39.01$

F. Meghan is excavating in a cave. She starts 24 meters below the surface and goes 8 m deeper each minute looking for fossils. Calculate Meghan's depth in the cave at each given time.

Minutes passed	Calculation	Depth (m)
10	$-24 - 8(10)$	-104
25	$-24 - 8(25)$	-224
x	$-24 - 8x$	y

F2) Let x be the minutes passed and d be the depth in the cave. Write an equation

$D = -24 - 8x$

F3) Use your equation to find Meghan's depth after 43 minutes of digging.

$D = -24 - 8(43)$

$= -24 - 344$

$D = -368$ ~~feet~~ meters

F4) Use your equation to find how many minutes she has been digging if Meghan is currently at a depth of 84 m.

$-84 = -24 - 8(x)$

$+24 \quad +24$

$\frac{60}{8} = \frac{-8x}{-8}$

$7.5 = x$ minutes

Writing Equations Practice (target ___) Name: Key

1. A tree is 46 feet tall and growing 2.6 feet per year.

Equation: $y = 46 + 2.6x$, x stands for: years y stands for: height (ft)

2. Elephant weighs 896 pounds and gains 8 pounds a year.

Equation: $y = 896 + 8x$, x stands for: years y stands for: Weight (lbs)

3. Steve the sumo wrestler on a diet, weighs 421 pounds, losing 1.8 pounds per week.

Equation: $y = 421 - 1.8x$ x stands for: weeks y stands for: weight (lbs)

4. Water level in the lake is 39.6 feet but dropping 6 inches per month.

Equation: $y = 39.6 - 6x$ x stands for: month y stands for: water level or depth

5. The number of trout in the stream is 857 and decreasing 23 each year.

Equation: $y = 857 - 23x$ x stands for: years y stands for: # of trout

6. Temperature of the oven is 375° and cooling off 28° each hour.

Equation: $y = 375 - 28x$ x stands for: hours y stands for: temperature

7. Girl's hair is 14" and growing .3" each week

Equation: $y = 14 + .3x$ x stands for: weeks y stands for: hair length

8. Chevy has 52 stuffed animal toys but he destroys 1.4 toys each week.

Equation: $y = 52 - 1.4x$ x stands for: week y stands for: stuffed animals

9. Billy is training for a marathon; he can run 18 miles a week now and runs 2 more miles each week.

Equation: $y = 18 + 2x$ x stands for: weeks y stands for: miles run

10. Erica is on the CC team; she races in 25 minutes now but she cuts 30 sec off her time each meet.

Equation: $y = 25 - .5x$ mins! x stands for: meets (½ minute) y stands for: race time

11. Chevy has 492 facebook friends but makes 3 more friends each day.

Equation: $y = 492 + 3x$ x stands for: days y stands for: facebook friends

12. Every summer, Mr. Howerton starts at 52 strokes but he drops 2 strokes each time he goes golfing.

Equation: $y = 52 - 2x$ x stands for: times golfing y stands for: total strokes

13. 20 degrees outside and temperature is going up 3 degrees each hour.

Equation: $y = 20 + 3x$ x stands for: hours y stands for: temp (°)

14. Oven is at 300 and cooling down 10 each minute.

Equation: $y = 300 - 10x$ x stands for: mins y stands for: temp °

15. 8 cats at the shelter, 1 gets adopted each week.

Equation: $y = 8 - 1x$ x stands for: week y stands for: Cats at Shelter

16. 24 hot dogs and 4 get eaten each hour.

Equation: $y = 24 - 4x$ x stands for: hour y stands for: hot dogs left

17. 3 dollars for each ice cream cone.

Equation: $y = 3x$ x stands for: # of cones y stands for: total cost (or $ spent)

18. Costco membership is $25 and then it is $2 each time you go shopping.

Equation: $y = 25 + 2x$ x stands for: times shopping y stands for: total cost

19. I lose $5 each time I talk during silent choice time. I have $48 to start with.

Equation: $y = 48 - 5x$ x stands for: times I talk y stands for: $ left

20. 400 people at the concert but another 5 people come each hour.

Equation: $y = 400 + 5x$ x stands for: hours y stands for: people at concert

21. I owe my parents $15 but I pay them 4 each week.

Equation: $y = 15 - 4x$ x stands for: week y stands for: $ owed to parents

22. My puppy weighs 18 pounds but he is gaining 3 pounds a week.

Equation: $y = 18 + 3x$ x stands for: week y stands for: puppy's weight

23. My other dog is on a diet. He weighs 130 pounds but he is losing 2.5 pounds each week.

Equation: $y = 130 - 2.5x$ x stands for: weeks y stands for: dog's weight