Word Problems Worksheet

Name: Key

Example 1: The second of two numbers is four more than the first. The sum of the numbers is 56. Find the numbers.

$y = x + 4$
$x + y = 56$

$x + x + 4 = 56$
$2x + 4 = 56$
$-4 \quad -4$
$\frac{2x}{2} = \frac{52}{2}$
$x = 26$

$y = 26 + 4$
$y = 30$

26 + 30

Example 2: Gym A charges a monthly fee of $20 plus $2 per time you go to the gym. Gym B only charges $4 per time you go to the gym. After how many trips to the gym would it cost the same for both? What would that cost be?

$y = 20 + 2x$
$y = 4x$

$4x = 20 + 2x$
$-2x \quad -2x$
$\frac{2x}{2} = \frac{20}{2}$
$x = 10$

$y = 4 \cdot 10$
$y = 40$

10 times
$40

1. The sum of two numbers is 90. Their difference is 18. Find the numbers.

$x + y = 90$
$x - y = 18$

$2x = 108$
$\frac{2x}{2} = \frac{108}{2}$

$x = 54$

$54 + y = 90$
$-54 \quad -54$
$y = 36$

54 + 36

2. The number of girls at Sky High School is 60 greater than the number of boys. If there are 1250 students all together, how many girls and boys are there? x = boys y = girls

$y = x + 60$
$x + y = 1250$

$x + x + 60 = 1250$
$2x + 60 = 1250$
$-60 \quad -60$
$\frac{2x}{2} = \frac{1190}{2}$

$x = 595$
$y = 655$

655 girls
595 boys

3. The second of two numbers is 5 more than twice the first. The sum of the numbers is 44. Find the numbers.

$y = 2x + 5$
$x + y = 44$

$x + 2x + 5 = 44$
$3x + 5 = 44$
$-5 \quad -5$
$\frac{3x}{3} = \frac{39}{3}$

$x = 13$

$y = 2(13) + 5$
$y = 26 + 5$
$y = 31$

13 + 31

4. The number of calories in a piece of pie is 20 less than three times the number of calories in a scoop of ice cream. The pie and ice cream together have 500 calories. How many calories are in each?

x = ice cream y = pie

$y = 3x - 20$
$x + y = 500$

$x + 3x - 20 = 500$
$4x - 20 = 500$
$+20 \quad +20$
$\frac{4x}{4} = \frac{520}{4}$

$y = 3(130) - 20$
$y = 370$

pie = 370
ice cream = 130

5. Sylvia sold twice as many tickets as Frank. They sold 54 tickets in all. How many did each sell?

x = Sylvia y = Frank

$x = 2y$
$x + y = 54$

$2y + y = 54$
$\frac{3y}{3} = \frac{54}{3}$
$y = 18$

$x = 2(18)$
$x = 36$

Sylvia = 36 tickets
Frank = 18 tickets

6. Adult tickets to a play cost $5 and student tickets cost $2. In all 720 tickets were sold for a total of $2640. How many adult and student tickets were sold?

x = Adult y = Student

$(x + y = 720)(-2)$
$5x + 2y = 2640$
$-2x - 2y = -1440$
$\frac{3x}{3} = \frac{1200}{3}$
$x = 400$

$400 + y = 720$
$-400 \quad -400$
$y = 320$

400 adult
320 student

7. One number is 5 more than half of another number. The sum of the numbers is 47. Find the numbers.

$y = \frac{1}{2}x + 5$
$x + y = 47$

$x + \frac{1}{2}x + 5 = 47$
$1\frac{1}{2}x + 5 = 47$
$-5 \quad -5$
$\frac{1\frac{1}{2}x}{1\frac{1}{2}} = \frac{42}{1\frac{1}{2}}$
$x = 28$

$y = \frac{1}{2}(28) + 5$
$y = 19$

28 + 19

8. The length of a rectangle exceeds its width by 3 meters. The perimeter is 58 meters. Find the dimensions.

x = width y = length

$y = x + 3$
$2x + 2y = 58$

$2x + 2(x+3) = 58$
$2x + 2x + 6 = 58$
$-6 \quad -6$
$\frac{4x}{4} = \frac{52}{4}$
$x = 13$

$y = 13 + 3$
$y = 16$

Length = 16 m
width = 13 m

9. Two cell phone companies offer texting plans. Company A charges $5 plus $0.25 per text. Company B charges $10 plus $0.15 per text. After how many texts will it cost the same for Company A and Company B? What will that cost be?

$y = .25x + 5$
$y = .15x + 10$

$.15x + 10 = .25x + 5$
$-.15x \quad -.15x$
$10 = .10x + 5$
$-5 \quad -5$
$5 = .10x$
$\frac{5}{.10} = \frac{.10x}{.10}$
$x = 50$

$y = .25(50) + 5$

50 texts
$17.50

Level 4

10. A grocer wants to mix together some cashews costing $8 per kilogram with som Brazil nuts costing $10 per kilogram. The grocer wants to sell 12 kilograms of the mixture for $8.50 per kilogram. How many kilograms of cashews and Brazil nuts are needed?

9 kg cashews
3 kg Brazil nuts