

Math 9 – Unit 4: Word Problems

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Lesson #2: Words to Equations

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Given the following mathematical operations, write down as many words that relate to it as you can:

+ more, addition, add, sum, plus, increased by, positive

– minus, subtract, negative, decreased by, less than, difference

× multiply, times, product, double, triple..., twice, of

÷ divide, quotient, ratio, half, third, quarter..., of

1. Convert each to an expression:

a) the product of a number and 12

$$n \times 12 \text{ or } 12n$$

b) 7 less than x → taking 7 from x

$$x - 7$$

c) the quotient of 77 and 7

$$\frac{77}{7}$$

d) half of 24

$$\frac{24}{2}$$

2. Convert each to an equation:

a) x decreased by 9 is 7

$$x - 9 = 7$$

b) r increased by 10 is 17

$$r + 10 = 17$$

c) twice v is equal to 28

$$2v = 28$$

d) a number squared is 8

$$x^2 = 8$$

3. Convert each sentence to an expression with a variable. Use a "LET" statement to define the variables.

a) There are 16 more white keys than black keys on a piano.

Let: black keys = x
white keys = $x + 16$

b) Jane is 6 years younger than her sister Melanie.

Let: Jane: $x - 6$
Melanie: x

Since we know nothing about Melanie, she is the unknown.

c) Michael has assists three more than twice the amount of goals.

Let: Assists: $2x + 3$
Goals: x

d) Japan's population is 3.5 times that of Canada.

Let: Japan: $3.5x$
Canada: x

e) When Erica bikes to work, it takes 15 minutes less than $\overset{3x}{\text{three times the time it takes to drive.}}$

Let: Bikes: $3x - 15$
Drives: x