Topic: Word problems into equations

Question: Write the phrase as an algebraic expression.

"three less than twice x"

Answer choices:

A $3 - 2x$

B $2x - 3$

C $2x + x - 3$

D $3 - 2x \cdot x$

Solution: B

The phrase we need to write with algebra is

"three less than twice x"

We know that "twice x" means "2 times x", and we can write it as $2x$. So now we can say that we're looking for

"three less than $2x$"

Therefore, the expression we're looking for is

$$2x - 3$$

If you're confused about that last step, try to think about it with specific numbers. If you were asked what number is three less than 10, you would know it's 7. To get from 10 to 7, you'd have to subtract 3 from 10, which is written as $10 - 3$. So when we want to write "three less than $2x$" as an algebraic expression, we know we need $2x - 3$.

Topic: Word problems into equations

Question: Find the value of the expression.

$\frac{3}{4}$ of 200

Answer choices:

A 170

B 200

C 150

D $\frac{4}{3}$

Solution: C

When we're turning a phrase into a mathematical expression or equation, the word "of" (immediately after a proper or improper fraction) tells us to multiply. Therefore,

$$\frac{3}{4} \cdot 200$$

$$\frac{3}{1} \cdot 50$$

$$150$$

We can also think about it this way: If we wanted one-fourth of 200, we'd know that we need to divide 200 by 4, and we'd say that $1/4$ of 200 is 50.

Since what we want to evaluate here is $3/4$ of 200 (and we can write $3/4$ as $3(1/4)$), we can just multiply that result by 3.

$$50 \cdot 3$$

$$150$$

Topic: Word problems into equations

Question: Find the number.

Four times a number decreased by 8 is 92.

Answer choices:

A -25

B 20

C 100

D 25

Solution: D

When we're turning a phrase into a mathematical expression or equation, the word "times" tells us to multiply. The word "decreased" tells us to subtract, and the word "is" means equals. Therefore,

$$4x - 8 = 92$$

$$4x - 8 + 8 = 92 + 8$$

$$4x = 100$$

$$x = 25$$