LESSON MAKER PRO

Formula Flip Lab

Rearrange equations to make the needed quantity stand alone.

HIGH SCHOOL · MA.912.AR.1.2

MA.912.AR.1.2 "Rearrange equations or formulas to isolate a quantity of interest."

NAME _____ DATE _____

ISOLATE THE TARGET

To isolate a quantity, use inverse operations to undo the operations around it. Do the same operation to both sides, and keep simplifying until the target variable is alone.

WORKED EXAMPLE

In C = (5/9)(F - 32), isolate F.

1. Multiply both sides by 9/5: (9/5)C = F - 32.
2. Add 32 to both sides: (9/5)C + 32 = F.
3. Write the isolated quantity first: F = (9/5)C + 32.

Answer: F = (9/5)C + 32

PRACTICE 6 problems

1 In A = lw, isolate w.

ANSWER _____

2 In d = rt, isolate r.

ANSWER _____

3 In V = Bh/k, isolate h.

ANSWER _____

4 In P = 2l + 2w, isolate w.

ANSWER _____

5 In y = (x - a)/b, isolate x.

ANSWER _____

6 In q = 7p - 4, isolate p.

ANSWER _____

APPLY IT Show your work

1 A music app charges a one-time setup fee of $18 plus $6 for each month. The total charge is modeled by T = 18 + 6m. If the total charge is $42, how many months did the subscription cover?

WORK SPACE

ANSWER _____

2 A student club earns $15 for each T-shirt sold and pays $24 for supplies. Its profit is modeled by E = 15s - 24. If the profit is $81, how many T-shirts were sold?

WORK SPACE

ANSWER _____

CHALLENGE One step up

The reciprocal of a device's total resistance R is modeled by 1/R = 1/x + 1/y. Rearrange the equation to isolate x.

WORK SPACE AND ANSWER

Formula Flip Lab

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	In A = lw, isolate w.	**w = A/l**
2	In d = rt, isolate r.	**r = d/t**
3	In V = Bh/k, isolate h.	**h = kV/B**
4	In P = 2l + 2w, isolate w.	**w = (P - 2l)/2**
5	In y = (x - a)/b, isolate x.	**x = by + a**
6	In q = 7p - 4, isolate p.	**p = (q + 4)/7**

PART 2 · APPLY IT

1. **m = 4 months** Substitute 42 for T to get 42 = 18 + 6m. Subtract 18, then divide by 6.
2. **s = 7 T-shirts** Substitute 81 for E to get 81 = 15s - 24. Add 24, then divide by 15.

CHALLENGE

x = Ry/(y - R)

Accept algebraically equivalent forms, such as A/l for w or (q + 4)/7 for p. For the challenge, require nonzero quantities and y not equal to R.