LESSON MAKER PRO

Formula Focus

Rearrange equations to make any quantity the subject.

HIGH SCHOOL · AI-A.CED.4

AI-A.CED.4 "Rewrite formulas to highlight a quantity of interest, using the same reasoning as in solving equations."

NAME _____ DATE _____

ISOLATE THE QUANTITY

To highlight a quantity, use inverse operations to get that variable alone on one side of the equation. Whatever operation you do to one side, do the same operation to the other side.

WORKED EXAMPLE

The formula V = 13r - 17 relates V and r. Rewrite the formula to highlight r.

1. Add 17 to both sides: V + 17 = 13r.
2. Divide both sides by 13: (V + 17)/13 = r.
3. Write the highlighted quantity first.

Answer: r = (V + 17)/13

PRACTICE 6 problems

1 The area formula is A = bh. Rewrite the formula to highlight h.

ANSWER _____

2 A gym charges C = 2s + 6, where s is the number of guest passes. Rewrite the formula to highlight s.

ANSWER _____

3 The distance formula is d = rt. Rewrite the formula to highlight t.

ANSWER _____

4 The relationship is q = (3/4)n - 8. Rewrite the formula to highlight n.

ANSWER _____

5 The simple interest formula is I = Prt. Rewrite the formula to highlight t.

ANSWER _____

6 The temperature formula is F = (9/5)C + 32. Rewrite the formula to highlight C.

ANSWER _____

APPLY IT Show your work

1 A food-delivery app pays a worker $E = 10d + 18$ dollars, where d is the number of completed deliveries and 18 dollars is a bonus. Rewrite the formula to highlight d so the worker can find the number of deliveries from the total earnings.

WORK SPACE

ANSWER _____

2 A student is designing a rectangular poster with perimeter $P = 2l + 2w$, where l is the length and w is the width. Rewrite the formula to highlight l.

WORK SPACE

ANSWER _____

CHALLENGE One step up

In a science lab, kinetic energy is modeled by $E = (1/2)mv^2$, where m is mass and v is velocity. Assume all quantities are positive. Rewrite the formula to highlight v.

WORK SPACE AND ANSWER

Formula Focus

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	The area formula is A = bh. Rewrite the formula to highlight h.	**h = A/b**
2	A gym charges C = 2s + 6, where s is the number of guest passes. Rewrite the formula to highlight s.	**s = (C - 6)/2**
3	The distance formula is d = rt. Rewrite the formula to highlight t.	**t = d/r**
4	The relationship is q = (3/4)n - 8. Rewrite the formula to highlight n.	**n = 4(q + 8)/3**
5	The simple interest formula is I = Prt. Rewrite the formula to highlight t.	**t = I/(Pr)**
6	The temperature formula is F = (9/5)C + 32. Rewrite the formula to highlight C.	**C = 5(F - 32)/9**

PART 2 · APPLY IT

1. **d = (E - 18)/10** Subtract 18 from both sides to remove the bonus. Divide both sides by 10 to isolate d.
2. **l = (P - 2w)/2** Subtract 2w from both sides. Divide both sides by 2 to isolate l.

CHALLENGE

v = √(2E/m)

Accept algebraically equivalent forms, such as C = (5F - 160)/9 for problem 6 and l = P/2 - w for the second word problem. For the challenge, the positive square root is required because the problem states that velocity is positive.