LESSON MAKER PRO

Function Formula Lab

Turn quantity relationships into function rules.

HIGH SCHOOL · HSF-BF.A.1

CCSS.Math.Content.HSF-BF.A.1 "Write a function that describes a relationship between two quantities. *"

NAME _____ DATE _____

BUILD THE RULE

A function names an output quantity and shows how it depends on an input quantity. Identify the starting amount, if there is one, and the amount that changes for each input unit. Use a variable for the input and write an expression for the output.

WORKED EXAMPLE

A gaming site gives 11 bonus coins, then 4 coins for each level completed. Let l be the number of levels. Write C(l), then find C(5).

1. Start with 11 coins.
2. Add 4 coins for each level: C(l) = 11 + 4l.
3. Substitute l = 5: C(5) = 11 + 4(5) = 31.

Answer: C(l) = 11 + 4l; C(5) = 31

PRACTICE 6 problems

1 A podcast platform charges a $7 account fee and $9 per episode downloaded. Let e be the number of episodes. Write C(e), the total cost.

ANSWER _____

2 The area A of a square depends on its side length s. Write A(s).

ANSWER _____

3 At 18 degrees, a science lab begins warming by 6 degrees each hour. Let h be the number of hours. Write T(h), the temperature.

ANSWER _____

4 A school store earns $12 for each spirit shirt sold. Let s be the number of shirts. Write R(s), the revenue.

ANSWER _____

5 A tank contains 50 gallons of water and drains 10 gallons each minute. Let m be the number of minutes. Write V(m), the water remaining.

ANSWER _____

6 The perimeter P of a regular hexagon depends on side length h. Write P(h).

ANSWER _____

APPLY IT Show your work

1 You are saving for a concert ticket. You already have $24 and save $16 each week. Let w be the number of weeks. Write S(w), then find how much you have after 7 weeks.

WORK SPACE

ANSWER _____

2 Your phone battery is at 96%. It decreases by 7 percentage points each hour while livestreaming. Let h be the number of hours. Write B(h), then find the battery percentage after 9 hours.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A school club sells art prints for $9 each and pays a $42 booth fee. Let n be the number of prints sold. Write P(n), the profit. Then determine the least number of prints needed for a profit of at least $75. Explain how you know.

WORK SPACE AND ANSWER

ANSWER KEY

Function Formula Lab

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A podcast platform charges a $7 account fee and $9 per episode downloaded. Let e be the number of episodes. Write C(e), the total cost.	**C(e) = 7 + 9e**
2	The area A of a square depends on its side length s. Write A(s).	**$A(s) = s^2$**
3	At 18 degrees, a science lab begins warming by 6 degrees each hour. Let h be the number of hours. Write T(h), the temperature.	**T(h) = 18 + 6h**
4	A school store earns $12 for each spirit shirt sold. Let s be the number of shirts. Write R(s), the revenue.	**R(s) = 12s**
5	A tank contains 50 gallons of water and drains 10 gallons each minute. Let m be the number of minutes. Write V(m), the water remaining.	**V(m) = 50 - 10m**
6	The perimeter P of a regular hexagon depends on side length h. Write P(h).	**P(h) = 6h**

PART 2 · APPLY IT

1. **S(w) = 24 + 16w; S(7) = 136, so you have $136.** The starting amount is 24, and the savings increase by 16 each week. Substitute 7 for w to get 24 + 16(7) = 136.
2. **B(h) = 96 - 7h; B(9) = 33, so the battery is 33%.** The battery starts at 96 and decreases by 7 for each hour. Substitute 9 for h to get 96 - 7(9) = 33.

CHALLENGE

P(n) = 9n - 42. The least number is 13 prints because 9(13) - 42 = 75, while 9(12) - 42 = 66, which is less than 75.

Accept equivalent function forms, such as 9e + 7 for C(e). For the challenge, accept a correct inequality solution, n >= 13, along with the minimum whole-number value of 13.