LESSON MAKER PRO

Math Model Mission

Turn real situations into equations you can check.

GRADE 7 · 7.MP.4

7.MP.4 "Model with mathematics."

NAME _____ DATE _____

BUILD A USEFUL MODEL

Choose what x represents, then use numbers and operations from the situation to write an equation. Solve the equation, then check whether your answer makes sense in the real situation.

WORKED EXAMPLE

Nia buys 4 art pens for $3 each and uses a $2 coupon. What is her total cost?

1. Let x be the total cost.
2. Model: x = 4(3) - 2.
3. Calculate: x = 12 - 2 = 10.
4. Check: Four $3 pens cost $12, and $2 off gives $10.

Answer: $10

PRACTICE 6 problems

1 A school club sells 6 wristbands for $8 each. Write an equation for x, solve, and check the total money collected.

ANSWER _____

2 Jules runs 7 laps around a 1/6-mile track. Write an equation for x, solve, and check the distance in miles.

ANSWER _____

3 A streaming service costs $11 for a month, and Kai rents one movie for $6. Write an equation for x, solve, and check the total cost.

ANSWER _____

4 In a video game, Priya starts with 30 points and earns 12 points in each of 6 rounds. Write an equation for x, solve, and check her final score.

ANSWER _____

5 The temperature at a morning soccer practice is -8 degrees. It rises 15 degrees by noon. Write an equation for x, solve, and check the noon temperature.

ANSWER _____

6 Ravi earns $45 doing chores and spends $18 on a game. Write an equation for x, solve, and check how much money remains.

ANSWER _____

APPLY IT Show your work

1 A music app charges the same amount each month. Use the table to find the monthly cost. Write an equation using x for total cost, find the cost for 11 months, and check your model with a table row.

MUSIC APP COST

Months	Cost ($)
1	9
6	54
8	72

ANSWER _____

2 The school esports club hires a van for a tournament. The van costs a flat fee of $16 plus $9 for each of 7 students. The club has $80. Write a model, solve, and decide whether the club has enough money. Include a check.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Two online game download plans have different costs. Plan A charges $17 each month plus $12 per game downloaded. Plan B charges $42 each month plus $7 per game downloaded. Let x be the number of games downloaded. Write and solve an equation to find when the plans cost the same. Then decide which plan costs less for 8 downloads and explain your reasoning.

WORK SPACE AND ANSWER

ANSWER KEY

Math Model Mission

GRADE 7 · 7.MP.4

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A school club sells 6 wristbands for $8 each. Write an equation for x, solve, and check the total money collected.	**x = 6(8) = 48. The club collects $48; check: 6 wristbands at $8 each cost $48.**
2	Jules runs 7 laps around a 1/6-mile track. Write an equation for x, solve, and check the distance in miles.	**x = 7(1/6) = 7/6 = 1 1/6. Jules runs 1 1/6 miles; check: seven laps of 1/6 mile make 7/6 mile.**
3	A streaming service costs $11 for a month, and Kai rents one movie for $6. Write an equation for x, solve, and check the total cost.	**x = 11 + 6 = 17. The total cost is $17; check: the monthly fee plus the rental is $17.**
4	In a video game, Priya starts with 30 points and earns 12 points in each of 6 rounds. Write an equation for x, solve, and check her final score.	**x = 30 + 6(12) = 102. Priya has 102 points; check: 6 rounds earn 72 points, and 30 + 72 = 102.**
5	The temperature at a morning soccer practice is -8 degrees. It rises 15 degrees by noon. Write an equation for x, solve, and check the noon temperature.	**x = -8 + 15 = 7. The noon temperature is 7 degrees; check: a rise of 15 from -8 reaches 7.**
6	Ravi earns $45 doing chores and spends $18 on a game. Write an equation for x, solve, and check how much money remains.	**x = 45 - 18 = 27. Ravi has $27 left; check: $27 + $18 = $45.**

PART 2 · APPLY IT

1. **The monthly cost is $9. x = 9 × (number of months), so for 11 months, x = 99. The 6-month row checks because 6 × 9 = 54.** Find the unit rate from any table row: $9 per month. Multiply $9 by 11, then verify the rule with a listed row.
2. **x = 16 + 7(9) = 79. Yes, the club has enough money because $79 is $1 less than $80; check: $16 + $63 = $79.** Add the flat fee to the per-student charge, 7 × $9. Compare the total of $79 with the $80 available.

CHALLENGE

17 + 12x = 42 + 7x. 5x = 25, so x = 5. The plans both cost $77 for 5 downloads. For 8 downloads, Plan A costs $113 and Plan B costs $98, so Plan B costs less by $15.

Accept equivalent equations and correct money or distance units. For check statements, accept any accurate verification that uses the original situation.