

Spot the Pattern

Use repeated reasoning to predict, check, and find shortcuts.

GRADES K-12 • Practice.MP8

CCSS.Math.Practice.MP8 "Look for and express regularity in repeated reasoning. Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts..."

NAME _____

DATE _____

NOTICE THE REPEATED MOVE

When a quantity grows by the same amount or the same group each time, list a few results in order. Notice the repeated move, then use repeated addition or multiplication to predict a new result. Check that your answer fits the pattern.

WORKED EXAMPLE

A museum puts 17 postcards on each display board. It fills 4 display boards. How many postcards are on the boards?

1. Start with 17 postcards on one board.
2. Add 17 again for each new board: 17, 34, 51, 68.
3. Use the shortcut 4 groups of $17 = 68$.
4. The pattern and the multiplication agree.

Answer: 68 postcards

PRACTICE 6 problems

- 1** A drink station packs 6 bottles in every carton. A volunteer lists the totals: 6, 12, 18, 24, __. Continue the pattern. How many bottles are in the next carton total?

ANSWER _____

- 2** A theater has 8 seats in each row. In a seating log, a student writes: 8, 16, 25, 32. Which entry does not fit the pattern, and what should it be?

ANSWER _____

- 3** At a game booth, each turn costs 5 tickets. Luis has 35 tickets. Count by fives or use a shortcut. How many turns can he take?

ANSWER _____

- 4** A bike repair club fixes 11 bikes at each event. Its running totals are 11, 22, 33, 44. Predict the total after the next two events. State the repeated move.

ANSWER _____

- 5** Gardeners plant 12 seedlings in each bed. They need the total for 6 beds. Write a multiplication shortcut and find the total.

ANSWER _____

- 6** A skateboard shop gives 10 reward points for each purchase. Nina says she will have 81 points after 8 purchases. Is her answer reasonable? Show the check.

ANSWER _____

APPLY IT Show your work

- 1** A coding club uses 18 minutes for each practice level. The table shows totals for several numbers of levels. Use the regularity to predict the total time for 15 levels.

CODING CLUB PRACTICE

Levels completed	Total minutes
3	54
6	108
9	162
12	216

ANSWER _____

- 2** Kai is saving for headphones. After 6 weeks, Kai has saved \$42. After 9 weeks, Kai has saved \$63. Kai saves the same amount each week. How much does Kai save each week, and how much will Kai have after 12 weeks?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A game designer is making a level map. Row 3 has 22 glowing tiles. Each new row has 6 more tiles than the row before it. How many tiles are in row 8? Then write a shortcut, in words, for finding any later row without listing every row.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A drink station packs 6 bottles in every carton. A volunteer lists the totals: 6, 12, 18, 24, __. Continue the pattern. How many bottles are in the next carton total?	30 bottles
2	A theater has 8 seats in each row. In a seating log, a student writes: 8, 16, 25, 32. Which entry does not fit the pattern, and what should it be?	25 is wrong. It should be 24.
3	At a game booth, each turn costs 5 tickets. Luis has 35 tickets. Count by fives or use a shortcut. How many turns can he take?	7 turns
4	A bike repair club fixes 11 bikes at each event. Its running totals are 11, 22, 33, 44. Predict the total after the next two events. State the repeated move.	66 bikes; add 11 bikes at each event.
5	Gardeners plant 12 seedlings in each bed. They need the total for 6 beds. Write a multiplication shortcut and find the total.	6 groups of 12 = 72 seedlings.
6	A skateboard shop gives 10 reward points for each purchase. Nina says she will have 81 points after 8 purchases. Is her answer reasonable? Show the check.	No. 8 groups of 10 = 80 points.

PART 2 • APPLY IT

- 270 minutes** Each increase of 3 levels adds 54 minutes. From 12 levels to 15 levels, add 54 to 216.
- \$7 per week; \$84 after 12 weeks** The savings increase by \$21 over 3 weeks, so the weekly amount is \$7. Add \$21 more from week 9 to week 12.

CHALLENGE

Row 8 has 52 tiles. Multiply the number of rows after row 3 by 6, then add 22.

Accept equivalent repeated-addition checks and multiplication statements. For the challenge, accept any clear shortcut that starts at row 3 and adds 6 for each later row.