LESSON MAKER PRO

Patterns in Motion

Use patterns in data to predict what comes next.

HIGH SCHOOL · MM.D3D.B.15.c

MM.D3D.B.15.c "Make a prediction based upon patterns."

NAME _____ DATE _____

PREDICT FROM A PATTERN

Compare equal steps in the input. If the output changes by the same amount each step, extend that change. If the output is multiplied by the same factor each step, extend that factor. A prediction assumes the pattern continues.

WORKED EXAMPLE

A rainwater tank holds 67 liters on day 31, 74 liters on day 32, and 81 liters on day 33. If the pattern continues, predict how much it holds on day 34.

1. Each day, the amount increases by 7 liters.
2. Day 34 is one day after day 33.
3. Add 7 to 81 to get 88.

Answer: 88 liters

PRACTICE 6 problems

1 The table shows water in a school cistern. If the pattern continues, predict the amount on day 8.

WATER IN A CISTERN

Day	Liters
0	150
2	140
4	130

ANSWER _____

2 The table shows a pond's algae count. If the pattern continues, predict the count on day 3.

ALGAE COUNT

Day	Count
0	12
1	24
2	48

ANSWER _____

3 Students sort a pile of flyers in rounds. If the pattern continues, predict how many flyers remain after round 5.

FLYERS REMAINING

Round	Flyers
0	256
1	128
2	64

ANSWER _____

4 The table shows the number of scooters repaired by a student team. State whether the pattern is linear or exponential, then predict the total at week 4.

SCOOTERS REPAIRED

Week	Total repaired
0	6
1	10
2	14
3	18

ANSWER _____

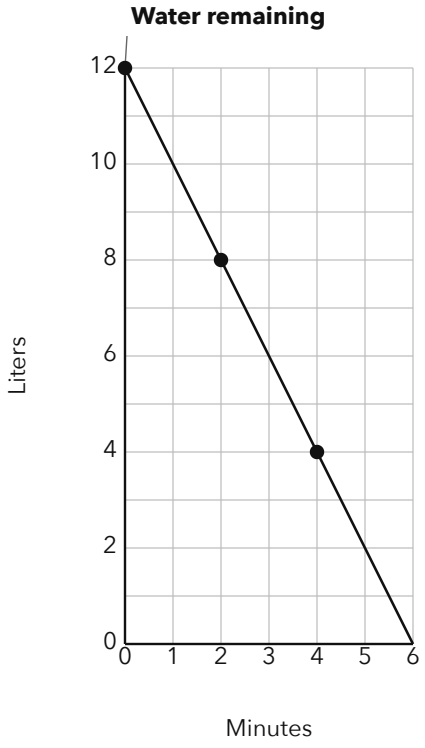
5 The table shows signatures on a student petition. If the pattern continues, predict the total on day 6.

PETITION SIGNATURES

Day	Signatures
0	3
2	12
4	48

ANSWER _____

6 The graph shows water remaining in a tank. If the pattern continues, predict how much remains after 5 minutes.



ANSWER _____

APPLY IT Show your work

1 A school bike-share station records 180 rides in week 0, 210 rides in week 2, and 240 rides in week 4. If the pattern continues, predict the number of rides in week 8.

WORK SPACE

ANSWER _____

2 A student group's clothing-swap post is shared by 15 people on day 0, 30 people on day 1, and 60 people on day 2. If the pattern continues, predict the number of shares on day 5.

WORK SPACE

ANSWER _____

CHALLENGE One step up

The table shows sign-ups for two campus cleanups. If each pattern continues, predict each group's sign-ups on day 4. Which group will have more sign-ups, and by how many? Explain using both patterns.

CLEANUP SIGN-UPS

Day	Group A	Group B
0	20	5
1	28	10
2	36	20

WORK SPACE AND ANSWER

Patterns in Motion

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	The table shows water in a school cistern. If the pattern continues, predict the amount on day 8.	**110 liters**
2	The table shows a pond's algae count. If the pattern continues, predict the count on day 3.	**96**
3	Students sort a pile of flyers in rounds. If the pattern continues, predict how many flyers remain after round 5.	**8 flyers**
4	The table shows the number of scooters repaired by a student team. State whether the pattern is linear or exponential, then predict the total at week 4.	**Linear; 22 scooters**
5	The table shows signatures on a student petition. If the pattern continues, predict the total on day 6.	**192 signatures**
6	The graph shows water remaining in a tank. If the pattern continues, predict how much remains after 5 minutes.	**2 liters**

PART 2 · APPLY IT

1. **300 rides** The number rises by 30 every 2 weeks. From week 4 to week 8, add 30 twice: 240 + 60 = 300.
2. **480 shares** The number doubles each day. Double 60 three times to reach day 5: 120, 240, 480.

CHALLENGE

Group A: 52 sign-ups. Group B: 80 sign-ups. Group B has 28 more because Group A adds 8 each day, while Group B doubles each day.

Accept equivalent explanations of the constant difference or constant factor. Predictions are conditional on each observed pattern continuing.