

Pattern Move Detectives

Find the rule that makes each pattern change.

GRADE 3 • 3.PFA.1.a

3.PFA.1.a "Identify and describe increasing and decreasing patterns using various representations (e.g., objects, pictures, numbers, number lines)."

NAME _____

DATE _____

SPOT THE CHANGE

An increasing pattern gets greater each time. A decreasing pattern gets smaller each time. Look for the same amount being added or subtracted again and again.

WORKED EXAMPLE

Complete and describe the pattern:

4, 8, 12, 16, ____.

1. Start at 4.
2. Add 4 each time.
3. $16 + 4 = 20$.

Answer: 20; increasing by 4

PRACTICE 6 problems

- 1** Complete and describe the pattern: 2, 5, 8, ____, 14.

ANSWER _____

- 2** Complete and describe the pattern: 19, 17, ____, 13, 11.

ANSWER _____

- 3** How is this picture pattern changing? • |
••• | •••••

ANSWER _____

- 4** A number line shows: 7 -> 14 -> 21 -> ____ -> 35. What number belongs in the blank? Describe the pattern.

ANSWER _____

- 5** Complete and describe the pattern: 30, 27, 24, 21, ____.

ANSWER _____

- 6** Fill in both blanks and describe the pattern: 31, ____, 25, ____, 19.

ANSWER _____

APPLY IT Show your work

- 1** In a video game, Nia earns 3 points on her first level. Each new level gives 7 more points than the level before. Write her points for the first level and the next three levels. Is the pattern increasing or decreasing?

WORK SPACE

ANSWER _____

- 2** Maya's tablet battery is 36% at noon. It drops 7 percentage points each hour. What are the battery percentages after one hour, two hours, and three hours? Describe the pattern.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Start at 9. Increase by 6 for three steps, then decrease by 6 for two steps. Write all six numbers, including 9. Describe the pattern.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Complete and describe the pattern: 2, 5, 8, ___, 14.	11; increasing by 3
2	Complete and describe the pattern: 19, 17, ___, 13, 11.	15; decreasing by 2
3	How is this picture pattern changing? • ••• •••••	It is increasing by 2 dots each time.
4	A number line shows: 7 -> 14 -> 21 -> ___ -> 35. What number belongs in the blank? Describe the pattern.	28; increasing by 7
5	Complete and describe the pattern: 30, 27, 24, 21, ___.	18; decreasing by 3
6	Fill in both blanks and describe the pattern: 31, ___, 25, ___, 19.	28, 22; decreasing by 3

PART 2 • APPLY IT

- 3, 10, 17, 24 points; increasing by 7** Start with 3 points and add 7 for each new level. The point totals are 3, 10, 17, and 24.
- 29%, 22%, 15%; decreasing by 7** Subtract 7 from 36 each hour. The battery readings are 29%, 22%, and 15%.

CHALLENGE

9, 15, 21, 27, 21, 15; it increases by 6, then decreases by 6

Accept equivalent descriptions such as “add 3 each time” or “goes up by 3.” For the picture pattern, accept “2 more dots each group.”