Pattern Detectives

Find the rule and keep each pattern going.

2.PAR.4 · Identify, describe, extend, and create repeating patterns, growing patterns, and shrinking patterns.

Name _____ Date _____

SPOT THE RULE

Look for what stays the same or how the number changes. A repeating pattern uses the same part again and again. A growing pattern adds each time, and a shrinking pattern takes away each time.

Worked example

A robot places 4 blocks, then 8 blocks, then 12 blocks. How many blocks will it place next?

1. Start with 4 blocks.
2. Add 4 blocks to get 8.
3. Add 4 blocks again to get 12.
4. Add 4 more blocks to get 16.

16 blocks

1. Practice

A bracelet shows star, moon, star, moon, star, moon. What two-bead part repeats?

2. Practice

A toy shelf has cube, cube, ball, cube, cube, ball, ___. What toy comes next?

3. Practice

A puppy gets 1 treat on Monday, 3 treats on Tuesday, 5 treats on Wednesday, ___ treats on Thursday, and 9 treats on Friday. How many treats does it get on Thursday?

4. Practice

A frog jumps 13 spaces, then 11 spaces, then 9 spaces, then ___. How many spaces does it jump next?

5. Practice

Choose two different shapes. Make your own repeating pattern showing its core three times. Circle one complete core and describe it.

6. Apply

At game club, Eli earns 1 point on Monday, 3 points on Tuesday, 5 points on Wednesday, and 7 points on Thursday. If the pattern continues, how many points will Eli earn on Friday?

7. Apply

Create a shrinking number pattern with four terms. Choose a start from 10 to 20 and subtract the same positive whole number each time without going below zero. Explain your rule.

8. Challenge

A pattern has these groups: circle, square; circle, circle, square; circle, circle, circle, square. Write the next group. Then explain the rule.

What to accept

Accept shape and snack answers in the correct order, with or without commas. For the challenge, accept any clear explanation that states one circle is added before each square.

1. Practice

star, moon

2. Practice

cube

3. Practice

7 treats

4. Practice

7 spaces

5. Practice

Answers vary; a chosen core must repeat three times. Example: circle-square repeated three times; circle one circle-square pair.

6. Apply

9 points

The points grow by 2 each day. Add 2 to 7 to get 9.

7. Apply

Answers vary, such as 18, 15, 12, 9; subtract 3.

Verify the student-chosen rule and all four terms.

8. Challenge

circle, circle, circle, circle, square