Patterns and rules

Name: _____ Date: _____

Remember: A rule tells you how each term follows from its **position** or from the **term before**. With a rule like "× 3 + 1" you get the 20th term **without writing all 20 terms**.

1. Write the next two terms: 7, 13, 19, 25, ...

Answer: _____

2. Write the next two terms: 96, 48, 24, ...

Answer: _____

3. Describe the rule in words: 5, 10, 20, 40, ...

Answer: _____

4. Rule: × 4 + 1. Complete the outputs for the inputs 2, 5, 8, 10.

Answer: _____

5. Find the rule: input 1 → 6, 2 → 11, 3 → 16.

Answer: _____

6. What is the 20th term of 4, 8, 12, 16, ...?

Answer: _____

7. Which number is missing? 3, ☐, 17, 24, 31

Answer: _____

8. Matchstick pattern: 1, 2 and 3 squares. How many matchsticks do you need for 5 squares?



1 2 3

Answer: _____

9. How many matchsticks do you need for 20 squares?

Answer: _____

10. How many squares can you make with 49 matchsticks?

Answer: _____

11. Flow diagram: input 12 → ÷ 3 → + 8 → output ?

Answer: _____

12. Flow diagram: input ? → × 6 → − 4 → output 50. What is the input?

Answer: _____

13. Write the next two terms: 1, 4, 9, 16, ...

Answer: _____

14. Lerato saves R15 in week 1 and then R5 more each week than the week before. How much does she save in week 10?

Answer: _____

15. How much has Lerato saved altogether after the first 4 weeks?

Answer: _____

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I got _____ **out of 15** ⭐⭐⭐

Memorandum · Patterns and rules

1. **31, 37**
   + 6 every time

2. **12, 6**
   ÷ 2 every time

3. **Double (multiply by 2) every time.**
   5 × 2 = 10; 10 × 2 = 20; 20 × 2 = 40

4. **9, 21, 33, 41**
   e.g. 2 × 4 + 1 = 9

5. **× 5 + 1**
   the output goes up by 5, so × 5; 1 × 5 = 5, plus 1 = 6

6. **80**
   term = position × 4; 20 × 4 = 80

7. **10**
   + 7 every time

8. **16**
   4, 7, 10, … : + 3 every time; 5 squares: 5 × 3 + 1 = 16

9. **61**
   rule: squares × 3 + 1; 20 × 3 + 1 = 61

10. **16**
    49 − 1 = 48; 48 ÷ 3 = 16

11. **12**
    12 ÷ 3 = 4; 4 + 8 = 12

12. **9**
    work backwards: 50 + 4 = 54; 54 ÷ 6 = 9

13. **25, 36**
    1 × 1, 2 × 2, 3 × 3, 4 × 4, 5 × 5, 6 × 6

14. **R60**
    R15 + 9 × R5 = R60

15. **R90**
    15 + 20 + 25 + 30 = 90

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