

Rule Trail

Find the pattern that connects inputs and outputs.

GRADE 4 • TEKS 4.1.F

4.1.F "analyze mathematical relationships to connect and communicate mathematical ideas; and"

NAME _____

DATE _____

FOLLOW THE RULE

A number rule changes each input into an output in the same way. Find the rule by checking a known input and output, then use it for the missing output. A rule may have one move or more than one move.

WORKED EXAMPLE

Input 3 gives output 21. Using the same rule, input 5 gives output ____.

1. $21 \div 3 = 7$.

2. The rule is multiply by 7.

3. $5 \times 7 = 35$.

Answer: 35

PRACTICE 6 problems

1 Input 4 gives output 24. Using the same rule, input 8 gives output _____. State the rule.

ANSWER _____

2 Input 2 gives output 18. Using the same rule, input 4 gives output _____. State the rule.

ANSWER _____

3 Input 9 gives output 72. Using the same rule, input 6 gives output _____. State the rule.

ANSWER _____

4 Input 48 gives output 8. Using the same rule, input 54 gives output _____. State the rule.

ANSWER _____

5 Input 12 gives output 48. Using the same rule, input 14 gives output _____. State the rule.

ANSWER _____

6 Input 11 gives output 88. Using the same rule, input 16 gives output _____. State the rule.

ANSWER _____

APPLY IT Show your work

- 1** In a robotics game, each completed mission earns 8 energy points. Diego completes 9 missions. How many energy points does he earn?

WORK SPACE

ANSWER _____

- 2** Lena uses 64 beads to make 8 matching bracelets. Each bracelet uses the same number of beads. How many beads will she need to make 6 bracelets?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A number rule changes 12 to 50 and 16 to 66. Input 24 gives output _____. Explain your rule.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Input 4 gives output 24. Using the same rule, input 8 gives output _____. State the rule.	Rule: multiply by 6. Missing output: 48.
2	Input 2 gives output 18. Using the same rule, input 4 gives output _____. State the rule.	Rule: multiply by 9. Missing output: 36.
3	Input 9 gives output 72. Using the same rule, input 6 gives output _____. State the rule.	Rule: multiply by 8. Missing output: 48.
4	Input 48 gives output 8. Using the same rule, input 54 gives output _____. State the rule.	Rule: divide by 6. Missing output: 9.
5	Input 12 gives output 48. Using the same rule, input 14 gives output _____. State the rule.	Rule: multiply by 4. Missing output: 56.
6	Input 11 gives output 88. Using the same rule, input 16 gives output _____. State the rule.	Rule: multiply by 8. Missing output: 128.

PART 2 • APPLY IT

- 72 energy points** Multiply 8 points per mission by 9 missions. $8 \times 9 = 72$.
- 48 beads** Divide 64 by 8 to find that each bracelet uses 8 beads. Multiply 8 by 6 to get 48 beads.

CHALLENGE

98. The rule is multiply the input by 4, then add 2. $24 \times 4 = 96$, and $96 + 2 = 98$.

Accept equivalent wording for each rule, such as “times 6” for “multiply by 6.” For the challenge, accept any clear explanation showing multiplication by 4 followed by adding 2.