

1.4 - Patterns and Functions

domain
input
x
independent
variable

range
output
y
dependent
variable

Vocabulary:

- Function
- Function Rule
- Dependent Variable
- Independent Variable
- Domain
- Range

function	
one input has exactly one output	$y = 5 + x$

function rule	
an equation that describes a functional relationship	

- 1 EXAMPLE** Suppose you are buying apples from a vending machine. Use the table to write a function rule.

Number of Apples	1	2	3	4
Cost c	\$0.35	\$0.70	\$1.05	\$1.40

$a = \text{apples}$
 $c = \text{cost}$

$$0.35a = c$$

pg. 29.

The relationships in the tables below are functions. Write a function rule for each.

#1.

<u>C</u> cans of soup	<u>S</u> Number of servings
1 • 4	4 S
2 • 4	8
3 • 4	12
4 • 4	16

$$C = \text{cans}$$

$$S = \text{servings}$$

$$4C = S$$

~~$$C = 4S$$~~

pg. 29.

The relationships in the tables below are functions. Write a function rule for each.

#1.

Number of hrs a plumber works	COST to home owner
1	\$ 65
2	\$ 90
3	\$ 115
4	\$ 140

Handwritten annotations: A purple '0' is written above the first column. A purple '40' is written above the second column. Purple arrows indicate a constant increase of +25 in the cost for each additional hour of work.

$$C = 40 + 25h$$

OBJECTIVE

1

2

EXAMPLE

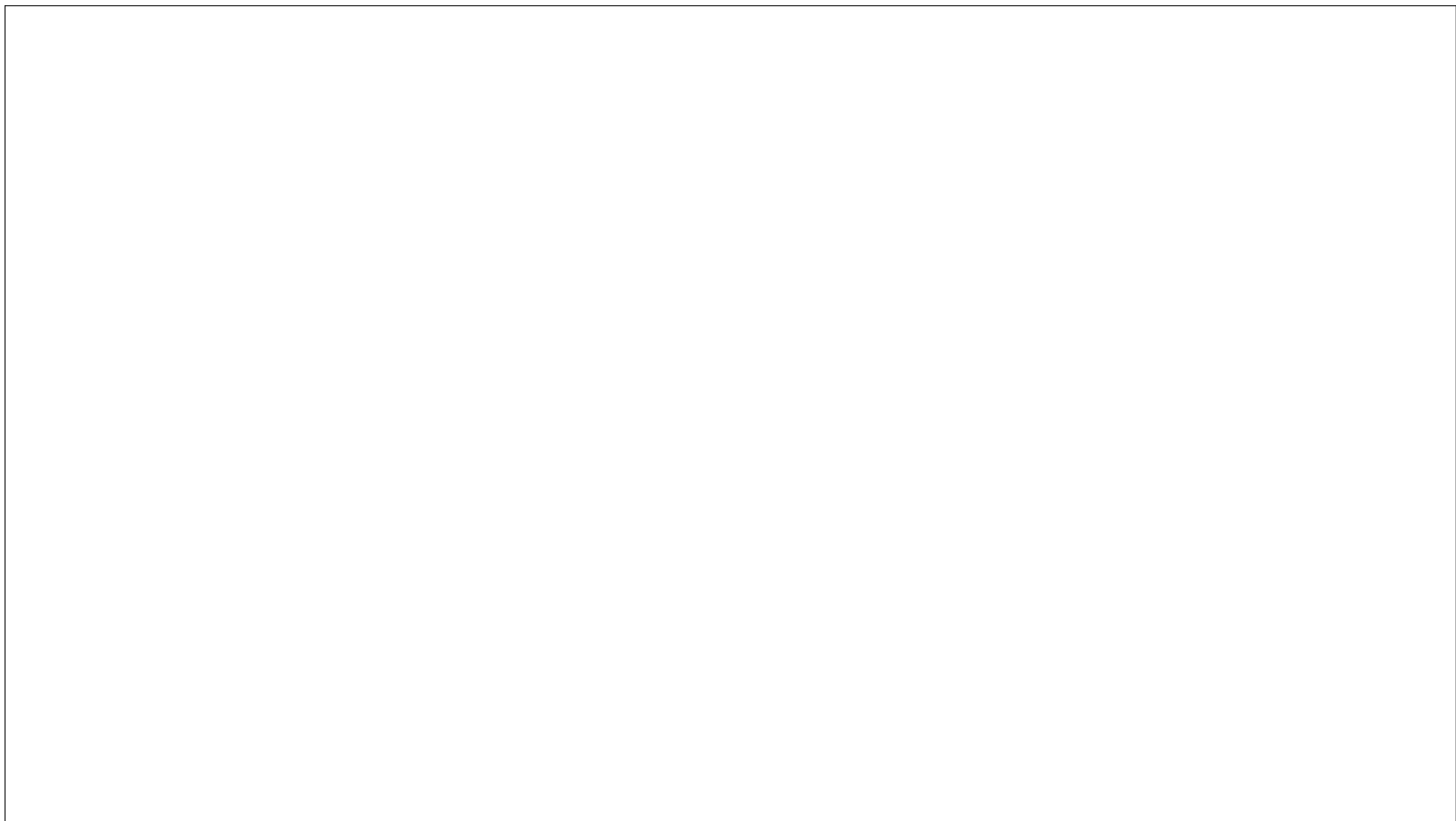
Make a two-story house by adding one toothpick that goes from side to side. Use the table to write a function rule.

Number of Houses	1	2	3	4
Total Toothpicks	7	13	19	25

$h = \text{houses}$

$t = \text{toothpicks}$

$$1 + 6h = t$$



3

EXAMPLE

Suppose you want to find out how much gas a trip will take, in a car that uses one gallon of gas to go about 18 miles. What are the independent quantity and the dependent quantity for this situation?

independent = gallons of gas
dependent = miles you can travel

Which one can
you control?
independent

pg. 29

Identify the independent and dependent quantity in each situation.

#5. The cost of a long-distance telephone call increases with the number of minutes of the call.



"I" ind.: minutes

"D" dep.: cost

1

4

EXAMPLE

Ken burns 425 calories per hour when he bikes. He bikes from 3 to 7 hours each weekend. Identify the independent and dependent quantities for this situation and find reasonable domain and range values.

$$425 \cdot 3 = 1,275$$

$$425 \cdot 7 = 2,975$$

① I: hours biked

Domain

D: 3 to 7

D: calories burned

R: 1,275 to 2,975

range

pg. 30

Identify the ^①independent and dependent quantities for each situation and find _②reasonable domain and range values.

#7. Tara's car travels about 25 miles on one gallon of gas. She has between 10 and 12 gallons of gas in the tank.

① I: gallons of gas

D: miles traveled

Domain: 10 to 12
 $\downarrow \cdot 25$ $\downarrow \cdot 25$

Range: 250 to 300

Homework Problems:

pg. 30 #9, 12, 17, 25, 29, 31