

Grade 8 - Understanding Functions - Worksheet

Common Core 8.F.A.1, 8.F.A.2, 8.F.A.3 · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

These 21 problems practice functions, function notation, linear and nonlinear functions and comparing functions (Common Core 8.F.A.1, 8.F.A.2 and 8.F.A.3). Each problem has its own space for work, so print the page and write directly on it.

The problems start with direct skill checks and grow harder as you go. Later items compare functions in different forms and use function rules in real situations. Use the answer key afterwards to check every step.

Grade 8 · Common Core State Standards: **8.F.A.1, 8.F.A.2, 8.F.A.3**

Exercise 1 - Table function

x	1	2	3	4
y	5	7	9	11

Does the table represent a function? Explain.

Exercise 2 - Repeated input

Is the relation $(1,2), (1,3), (2,5)$ a function? Explain.

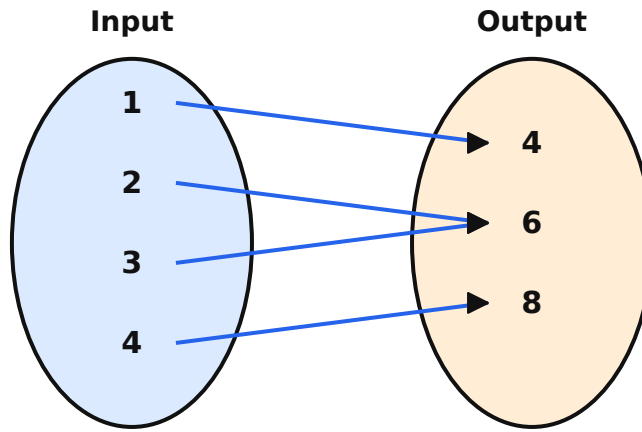
Exercise 3 - Evaluate

If $f(x) = 3x - 2$, find $f(4)$.

Exercise 4 - Evaluate with a square

If $f(x) = x^2 + 1$, find $f(-2)$.

Exercise 5 - Mapping diagram



Arrows from inputs to outputs.

Does the mapping diagram show a function? Explain.

Exercise 6 - Find the rule

x	0	1	2	3
y	1	3	5	7

Write a rule $y = mx + b$ for the table.

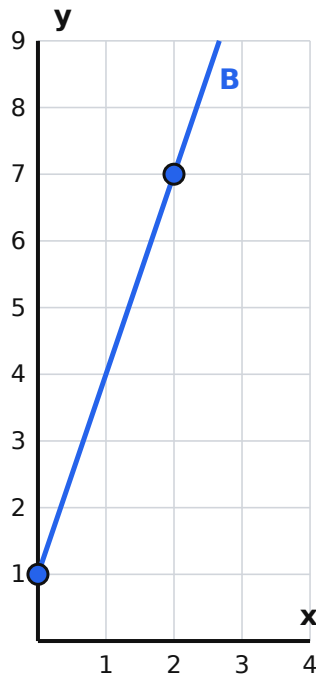
Exercise 7 - Graph a function

Make a table for $y = x + 2$ with $x = 0, 1, 2, 3$, then graph it.

Exercise 8 - Compare two functions

Function A is $y = 3x + 1$. Function B has the points $(0, 2)$, $(1, 5)$, $(2, 8)$. Compare the rates of change and the initial values.

Exercise 9 - Graph versus equation



Function B is graphed.

Function A is $f(x) = 2x + 5$. Function B is graphed. Which has the greater rate of change?

Exercise 10 - Linear or nonlinear table

x	1	2	3	4
y	1	4	9	16

Is the function linear or nonlinear? Explain.

Exercise 11 - Linear equation

Is $y = 5 - 2x$ linear? Give its rate of change and initial value.

Exercise 12 - Which are linear

Which equations are linear? (a) $y = 2x + 3$ (b) $y = x^2$ (c) $y = \frac{1}{x}$ (d) $y = -4x$

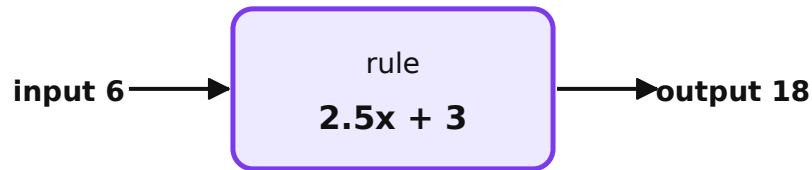
Exercise 13 - Domain and range

List the inputs and outputs of the function with ordered pairs (1, 3), (2, 5), (3, 7).

Exercise 14 - Solve for the input

If $f(x) = 4x - 3$ and $f(x) = 17$, find x .

Exercise 15 - Taxi fare function



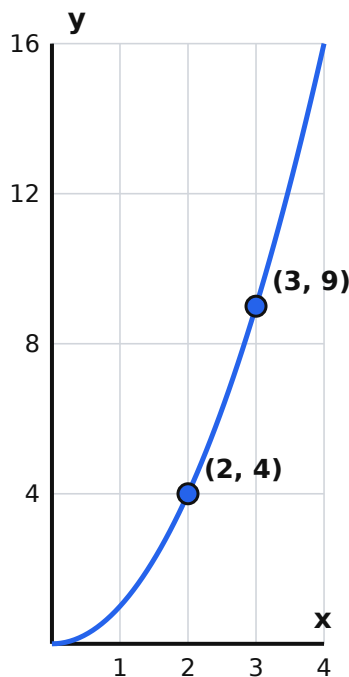
Fare rule for 6 miles.

A taxi fare in dollars is $f(x) = 2.5x + 3$, where x is the number of miles. Find the fare for 6 miles and explain what 2.5 and 3 mean.

Exercise 16 - Is it a function?

A relation pairs each student with their favorite color. Is it a function from student to color? Is it a function from color to student? Explain.

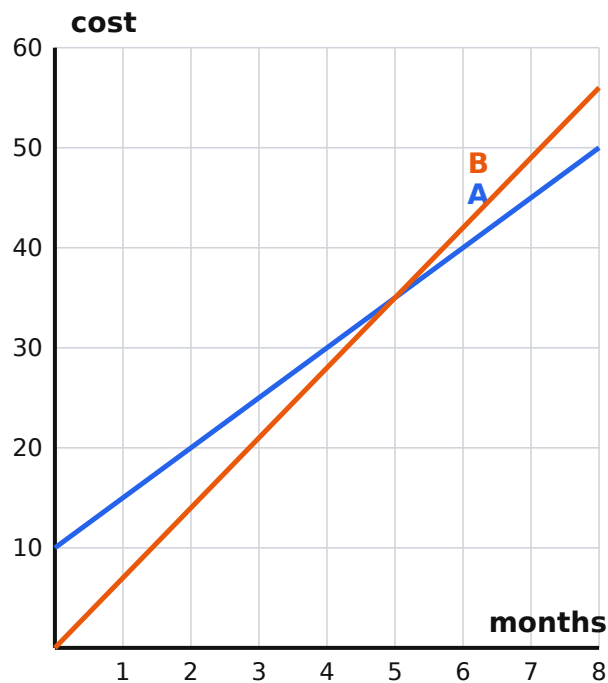
Exercise 17 - Area of a square



Area $A = s^2$.

The area of a square tile is $A(s) = s^2$. Find $A(5)$. Is the function linear? Explain.

Exercise 18 - Phone plans



Plan A and plan B costs.

Plan A costs \\$10 to start and \\$5 per month. Plan B is $y = 7x$. Which plan costs less after 4 months? After 6 months?

Exercise 19 - Candle

A candle is 12 inches tall and burns down 1.5 inches each hour. Write a function for its height h after t hours. Is it linear? When is it 6 inches tall?

Exercise 20 - Decreasing table

x	0	2	4	6
g(x)	6	4	2	0

Is g linear? Find its rate of change and write a rule.

Exercise 21 - Explain the vertical line

Explain why the graph of a vertical line, such as $x=3$, is not a function.