

Name \_\_\_\_\_

Date \_\_\_\_\_

VERTEXMATH • BUILD YOUR OWN • MCR3U GRADE 11

# Introduction to Functions: your summary

**1** Fill in every blank from memory. No notes.

**2** Check it against the Unit Summary in a different colour.

**3** Tick ✓ or X on each card. Every X is a topic to review.

vertexmath.ca  
Worksheet, answers &  
this cheat sheet



## 1 Function or relation?

☒ ☐

**1** State the vertical-line test.

**2** Is  $\{(-6, 8), (13, 8), (-6, 17)\}$  a function? Why?

## 2 Evaluating $f$

☒ ☐

**3**  $g(x) = 2x^2 - x$ . Find  $g(-4)$ .

**4**  $g(x) = 2x^2 - x$ . Find  $g(x - 1)$ .

## 3 Solving $f(x) = k$

☒ ☐

**5**  $h(x) = x^2 + 2x$ . Solve  $h(x) = 8$ .

## 4 Parent functions

☒ ☐

**6** Give the domain and range of  $y = x^2$ ,  $y = \sqrt{x}$ ,  $y = |x|$  and  $y = 1/x$ .

## 5 Finding the domain

☒ ☐

**7** Domain of  $f(x) = \sqrt{8 - 4x}$ , in interval notation.

**8** Restrictions on  $g(x) = \frac{x+3}{x^2-9}$ .

## 6 Range and notation

☒ ☐

**9** Write  $\{y \in \mathbb{R} \mid -7 < y \leq 8\}$  in interval notation.

**10** When does a square bracket go next to  $\infty$ ?

## 7 The inverse $f^{-1}$

☒ ☐

**11** Find  $f^{-1}(x)$  for  $f(x) = \frac{3x-4}{7}$ .

**12** How are the domain and range of  $f$  and  $f^{-1}$  related?

## 8 Graph of the inverse

☒ ☐

**13**  $(-3, 6)$  is on  $f$ . Which point is on  $f^{-1}$ ?

**14** Sketch  $f$ ,  $f^{-1}$  and the reflection line for  $f(x) = x^2, x \geq 0$ . (no single answer)

**My traps** Your three most likely mistakes, and how you will catch each one.

**1** \_\_\_\_\_ **2** \_\_\_\_\_ **3** \_\_\_\_\_

**Answers** • Answers to the numbered prompts. Cover this strip until you are done.

**1** A graph is a function if no vertical line meets it more than once  
**2** No:  $-6$  has two outputs ( $8$  and  $17$ )  
**3**  $g(-4) = 2(16) + 4 = 36$   
**4**  $2(x-1)^2 = 2x^2 - 5x + 3$   
**5**  $x^2 + 2x - 8 = 0: x = 2 \text{ or } x = -4$   
**6**  $x \neq 3$  and  $x \neq -3$   
**7**  $8 - 4x \geq 0 \Rightarrow x \leq 2: (-\infty, 2]$   
**8**  $x \neq 0, y \neq 0$   
**9**  $x^2: \mathbb{R}; y \geq 0; \sqrt{x}: x \geq 0, y \geq 0; |x|: \mathbb{R}, y \geq 0$   
**10** Never:  $\pm\infty$  always takes a round bracket  
**11**  $f^{-1}(x) = (7x + 4)/3$   
**12** They swap: domain of  $f^{-1}$  = range of  $f$ , range of  $f^{-1}$  = domain of  $f$   
**13**  $(6, -3)$