

# Practice Worksheet — Grade 11 Mathematics

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## Factoring quadratics

1. Factor:  $x^2 - 9$ 
  - a)  $(x-3)^2$
  - b)  $(x-9)(x+1)$
  - c)  $(x-3)(x+3)$
  - d)  $(x+9)(x-1)$

## Graph reading

2. A circle graph shows how a worker's monthly budget is divided. Housing takes up 35% of the budget. What is the angle of the housing sector, in degrees?

Answer: \_\_\_\_\_ (°)

## Interest and credit

3. A worker deposits \$2 500 in an account paying 4.5% simple interest per year. How much interest has it earned after 3 years, in dollars?

Answer: \_\_\_\_\_

## Math20 1 angles in standard position

4. What is  $\sin(90^\circ)$ ?

Answer: \_\_\_\_\_

## Math20 1 quadratic functions

5. What is the vertex x-coordinate of  $y = (x - 3)^2 + 4$ ?

Answer: \_\_\_\_\_

## Math20 1 radicals and rational expressions

6. Simplify:  $(x^2 - 9)/(x - 3)$ 
  - a)  $x^2 - 3$
  - b)  $x - 3$
  - c)  $x + 3$
  - d)  $x + 9$

**Math20 1 solving linear systems**

7. Solve the system  $x + y = 10$ ,  $x - y = 2$ . Find  $x$ .

Answer: \_\_\_\_\_

**Math20 2 angles and triangle laws**

8. What is the sum of the interior angles of a regular heptagon (a polygon with 7 sides), in degrees?

Answer: \_\_\_\_\_ ( $^{\circ}$ )

**Math20 2 quadratic functions**

9. How many x-intercepts does the graph of  $y = x^2 + 2x + 5$  have?

- a) One
- b) None
- c) Two
- d) It cannot be determined without graphing

**Math20 2 radicals and reasoning**

10. A student conjectures that for every whole number  $n$ , the value of  $n^2 + n + 11$  is prime. Which one of these values of  $n$  disproves the conjecture?

- a)  $n = 5$
- b)  $n = 10$
- c)  $n = 1$
- d)  $n = 9$

**Math20 2 rates and scale factors**

11. A car travels 450 km on 36 L of fuel. What is its fuel efficiency as a unit rate, in kilometres per litre?

Answer: \_\_\_\_\_ (km/L)

**Math20 3 budgets and borrowing**

12. The same \$2 500 is instead invested at 4.5% compounded annually for 3 years. How much interest does it earn, in dollars, rounded to the nearest cent?

Answer: \_\_\_\_\_

**Math20 3 choosing and reading graphs**

13. Using that same steady trend of sales rising from \$40 000 in 2020 to \$64 000 in 2024, estimate the sales in 2026, in dollars.

Answer: \_\_\_\_\_

**Math20 3 formulas and unit analysis**

14. A highway sign warns of a 6% grade. Over a horizontal distance of 2 500 m, how many metres does the road drop?

Answer: \_\_\_\_\_ (m)

**Math20 3 right triangle trig**

15. A loading ramp rises 0.9 m over a horizontal run of 10.8 m. What angle does the ramp make with the ground, in degrees, rounded to one decimal place?

Answer: \_\_\_\_\_ (°)

**Math20 3 surface area and capacity**

16. A closed rectangular crate measures 40 cm long, 25 cm wide and 15 cm high. How much cardboard is needed to cover all six faces, in square centimetres?

Answer: \_\_\_\_\_ (cm<sup>2</sup>)

**Normal distribution**

17. Scores on a test are normally distributed with a mean of 70 and a standard deviation of 8. A student scores 82. What is that student's z-score?

Answer: \_\_\_\_\_

**Radicals**

18. Simplify:  $\sqrt{72}$ . Write your answer as  $k$ , where the simplified form is  $k\sqrt{2}$ .

Answer: \_\_\_\_\_

**Sine cosine law**

19. A triangular garden plot has sides of 9 m, 12 m and 15 m. Using the cosine law, find the measure of the largest angle in the plot, in degrees.

Answer: \_\_\_\_\_ (°)

**Slope**

20. On a graph of distance against time for a vehicle moving at a steady speed, what does the slope of the line represent?
- a) The speed of the vehicle
  - b) The total time taken
  - c) The total distance travelled
  - d) The acceleration of the vehicle