



## Grade 9 Math Practice — Grade 9 (Set 10) — Answer Key

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### Number & Operations

*Exponents, radicals, rational numbers, and order of operations.*

1. Simplify:  $(-3)^2 + 4 \times 2 - 1$

A) 14

**B) 16 [CORRECT]**

C) 18

D) 8

2. Evaluate:  $144 \div 49$

**A) 5 [CORRECT]**

B) 7

C) 9

D) 3

3. Simplify:  $2^3 \times 2 \div 2$

**A) 4 [CORRECT]**

B) 8

C) 16

D) 32

4. Express 0.6 as a fraction.

A)  $\frac{3}{5}$

**B)  $\frac{2}{3}$  [CORRECT]**

C)  $\frac{6}{10}$

D)  $\frac{6}{9}$

5. Evaluate:  $(-2)^3 + 3^2$

**A) 25 [CORRECT]**

B) 7

C) -7

D) -25



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6. Simplify:  $(32 \div 32) \times 3^2$ . Express as a single power of 3.

**Answer:**  $3^{(2 \div 2 + 2)} = 3^2$ .

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**Algebra & Coding***Expand, factor, and solve equations.***7.** Expand and simplify:  $3(2x - 4) + 5x$ **A)  $11x - 12$  [CORRECT]**B)  $11x - 4$ C)  $6x - 12$ D)  $11x + 12$ **8.** Solve:  $2(x + 3) = 5x - 9$ **A)  $x = 5$  [CORRECT]**B)  $x = 3$ C)  $x = 1$ D)  $x = -5$ **9.** Factor completely:  $6x^2 + 9x$ **A)  $3x(2x + 3)$  [CORRECT]**B)  $x(6x + 9)$ C)  $3(2x^2 + 3x)$ D)  $6x(x + 9)$ **10.** Simplify:  $(4x^2 - 2x + 1) - (x^2 + 3x - 5)$ **A)  $3x^2 - 5x + 6$  [CORRECT]**B)  $3x^2 + x - 4$ C)  $5x^2 + x + 6$ D)  $3x^2 - 5x - 4$ **11.** If  $f(x) = 2x - 3$ , find  $f(7)$ .**A) 11 [CORRECT]**

B) 14

C) 17

D) 8



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12. The perimeter of a rectangle is 58 cm. The length is 3 more than twice the width. Find the dimensions.

**Answer:** Let  $w$  = width,  $l = 2w + 3$ .  $2(w + 2w + 3) = 58$  ?  $6w + 6 = 58$  ?  $w = 52/6$  ? 8.67 cm,  $l$  ? 20.33 cm.

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**Linear Relations***Slope, y-intercept, graphing, and equations of lines.***13.** What is the slope of the line through (2, 5) and (6, 13)?

A) 1

**B) 2 [CORRECT]**

C) 3

D) 4

**14.** A line has equation  $y = ?3x + 7$ . The y-intercept is:

A) ?3

B) 3

**C) 7 [CORRECT]**

D) ?7

**15.** Which equation has slope  $1/2$  passing through the origin?A)  $y = 2x$ **B)  $y = x/2$  [CORRECT]**C)  $y = x + 1/2$ D)  $y = (x+1)/2$ **16.** Two lines have slopes  $2/3$  and  $?3/2$ . They are:

A) Parallel

**B) Perpendicular [CORRECT]**

C) The same line

D) Neither

**17.** The x-intercept of  $y = 3x + 8$  is:**A) (-2.67, 0) [CORRECT]**

B) (0, 8)

C) (3, 0)

D) (0, 0)

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18. A cell phone plan costs \$25/month plus \$0.05 per text. Write  $C$  as a function of  $t$  texts. Cost for 200 texts?

**Answer:**  $C = 25 + 0.05t$ .  $C(200) = 25 + 10 = \$35$ .

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**Geometry (Analytic & Measurement)***Distance, midpoint, area, volume, and circle properties.***19.** Find the midpoint of (1, 3) and (7, 9).

A) (3, 6)

**B) (4, 6) [CORRECT]**

C) (4, 5)

D) (8, 12)

**20.** A cylinder has  $r = 7$  cm and  $h = 10$  cm. Volume? (Use  $\pi \approx 3.14$ )

A) 1519

**B) 1539 [CORRECT]**

C) 1559

D) 440

**21.** The area of a circle is  $154 \text{ cm}^2$ . Approximate radius? (Use  $\pi \approx 3.14$ )

A) 5 cm

**B) 7 cm [CORRECT]**

C) 10 cm

D) 14 cm

**22.** Distance between (0, 0) and (3, 4)?**A) 5 [CORRECT]**

B) 7

C) 12

D) 25

**23.** A cone has  $r = 7$  cm and  $h = 12$  cm. Find volume and surface area. Use  $V = \frac{1}{3}\pi r^2 h$  and  $SA = \pi r^2 + \pi r \sqrt{r^2 + h^2}$ .**Answer:  $V = 615.4 \text{ cm}^3$ . Slant =  $\sqrt{7^2 + 12^2} = 13.89$ .  $SA = 459.2 \text{ cm}^2$ .**



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### Data & Probability

*Analyze data sets, calculate statistics, and determine probability.*

**24.** Data: 12, 15, 15, 18, 20, 22, 25. The IQR is:

A) 5

**B) 7 [CORRECT]**

C) 8

D) 10

**25.** Two dice are rolled.  $P(\text{sum} = 7) = ?$

A)  $1/6$

B)  $1/12$

C)  $7/36$

**D)  $6/36$  [CORRECT]**

**26.** A scatter plot shows negative correlation. This means:

A)  $x?$ ,  $y?$

**B)  $x?$ ,  $y?$  [CORRECT]**

C) No relationship

D)  $x = y$

**27.** Which sampling method is least biased?

A) Convenience

B) Voluntary

**C) Simple random [CORRECT]**

D) Self-selected

**28.** A class of 30 students took a test. Mean = 72, median = 75. One student scored 20. How does removing that outlier affect the mean vs. the median? Explain.

**Answer: Removing the outlier raises the mean significantly (new mean ? 73.8). The median changes little because it depends on the middle value, not extremes.**



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### Financial Literacy

*Simple interest, tax, budgeting, and financial decision-making.*

**29.** You invest \$362 at 5% simple interest for 3 years. How much interest?

A) \$44.3

**B) \$54.3 [CORRECT]**

C) \$64.3

D) \$18.1

**30.** A jacket costs \$89.99 plus 13% HST. Total?

A) \$100.69

**B) \$101.69 [CORRECT]**

C) \$102.69

D) \$93.69

**31.** Which is a fixed expense?

A) Movie tickets

**B) Rent [CORRECT]**

C) Clothing

D) Restaurant meals

**32.** A 15% tip on a \$42 meal is:

A) \$5.30

**B) \$6.30 [CORRECT]**

C) \$7.30

D) \$8.30

**33.** Maya earns \$15.50/hr, works 25 hrs/week. Deductions are 22% of gross. Find weekly net pay.

**Answer: Gross =  $15.50 \times 25 = \$387.50$ . Deductions =  $0.22 \times 387.50 = \$85.25$ . Net =  $\$302.25$ .**



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