Math 9 Core Review Solutions

No calculator. Show your work in the space provided.

Part 1: BEDMAS

1. $\frac{2}{3} - \frac{4}{5}$

   $-\frac{2}{15}$

2. $3 - \frac{5}{7}$

   $\frac{16}{7}$ or $2\frac{2}{7}$

3. Convert the mixed fraction $2\frac{2}{5}$ to an improper fraction in the form $\frac{a}{b}$

   $\frac{12}{5}$

4. Evaluate 3.5×2.7

   9.45

5. $\frac{2}{9} \times \frac{5}{3}$

   $\frac{10}{27}$

6. $\frac{3}{4} \times 4$

   3

7. $\frac{2}{3} \div \frac{2}{7}$

   $\frac{7}{3}$

8. $3 \div \frac{4}{5}$

   $\frac{15}{4}$

9. $3 - 2 \times 4$

   -5

10. $2 - 4 \times 5 + 5$

    -13

11. $0/1$

    0

12. $\frac{16}{2 \times 4}$

    2

13. $3^2 - 2(1 - 5)^2$

    -23

Part 2: Polynomials

14. $2x + x - 5x$
    $-2x$

15. $4x^2 - 2x + x^2 + 7x$
    $5x^2 + 5x$

16. $5x - 4 + x - (2 - x)$
    $7x - 6$

17. $3x^2(2 + 3x - 5x^2)$
    $-15x^4 + 9x^3 + 6x^2$

18. $\frac{24x^2 - 12x}{4x}$
    $6x - 3$

Part 3: Algebra and Equations

19. Solve $8x = 20$
    $x = \frac{5}{2}$

20. Solve $\frac{x}{3} = 5$
    $x = 15$

21. Solve $\frac{2}{x} = \frac{4}{5}$
    $\frac{5}{2}$

22. Solve $\frac{9}{x} = 5$
    $\frac{9}{5}$

23. Solve $2 + x = 3(x - 7)$
    $x = \frac{23}{2}$

Part 4: Exponents

24. Evaluate 5^3
    125

25. Write as a single power: $z \times z \times z \times z \times z = z^?$
    z^5

26. Evaluate $(-7)^2$
    49

27. Evaluate $(-4)^3$
-64

28. Simplify $x(x^3)(x^5)$
x^9

29. Simplify $(3x^3)^3$
$27x^9$

30. Simplify $\left(-\frac{3}{4}\right)^2$
$\frac{9}{16}$

31. Simplify $\frac{x^9}{x^5}$
x^4

32. Simplify $\left(\frac{x^3}{4}\right)^3$
$\frac{x^9}{64}$

33. Evaluate -5^2
-25

34. Evaluate $(-1)^6$
1

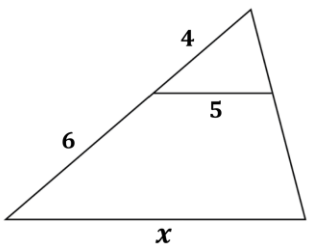
35. Simplify $\left(x \cdot \frac{x^7}{x^3}\right)^2$
x^{10}

36. Simplify $\frac{x}{x^4} \div \frac{x^3}{x^5}$
$\frac{1}{x^3} \times x^2 = \frac{1}{x}$

37. Simplify $\frac{27x^5y^6}{9xy^3}$
$3x^4y^3$

Part 5: Proportional Reasoning

38. Find x in the diagram below:

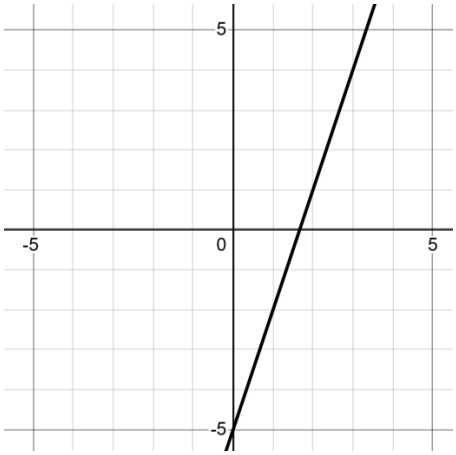


$\frac{x}{10} = \frac{5}{4}$
$\frac{50}{4} = \frac{25}{2}$

Part 6: Proportional Reasoning

39. Where is the point $(2, -3)$ located?
    A. Top right (Quadrant I)
    B. Top left (Quadrant II)
    C. Bottom left (Quadrant III)
    D. Bottom right (Quadrant IV)
    D

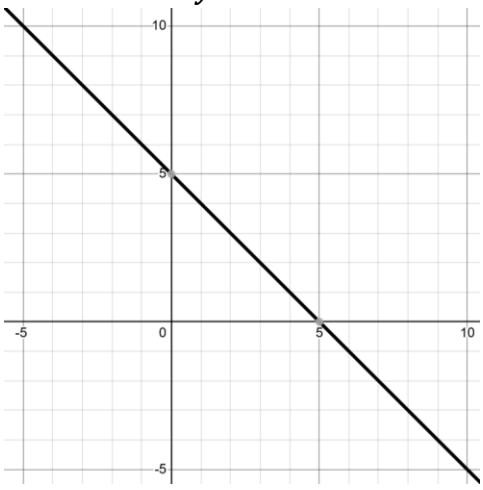
40. $y = 3x - 5$
    a. Sketch this line



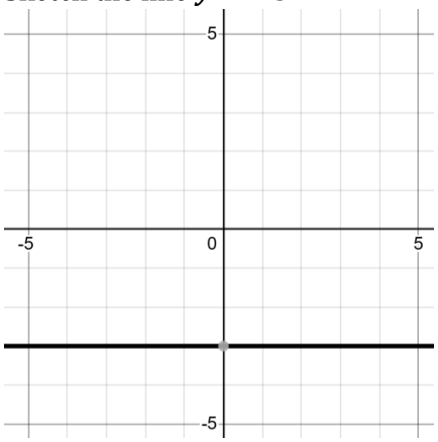
    b. Slope?
    3

    c. y-intercept?
    -5

41. Sketch the line $y = -x + 5$



42. Sketch the line $y = -3$



Part 7: Statistics in Society

43. Find the average of the numbers $2, 10, 9$

$m = \frac{2+10+9}{3} = \frac{21}{3} = 7$

44. The mean of the numbers $3, 10, k$ is 8. Find k.

$8 = \frac{3+10+k}{3}$

$24 = 13 + k$

$11 = k$

45. Find the median of the numbers $2, 10, 16, 100$

$\frac{10+16}{2} = 13$

46. Find the median of the numbers $3, -20, 10, 100$

$-20, 3, 10, 100$

$\frac{3+10}{2} = \frac{13}{2}$ or 6.5

47. Find the range of the numbers $6, -50, 20, 4000$

$4000 - (-50) = 4050$

Part 8: Financial Literacy

48. You inherit $1000 for 3 years at 10% interest. Use the simple interest formula $I = P \times r \times t$ to roughly estimate how much you owe in 3 years.
$A = 1000 + I = 1000 + 1000 \times 0.10 \times 3 = \$1300$

49. Suppose you have $5000 to invest. If you earn 20% interest. How much do you earn in real life after two years? Do not use the simple interest formula.
Year 1: $5000 \times 1.20 = \$6000$
Year 2: $6000 \times 1.20 = \$7200$

50. You celebrate graduating from Grade 9 math by buying your family a $300 meal (which includes taxes).
You want to add 15% tip to this subtotal. How much do you pay in total?
$300 \times 1.15 = \$345$