

Math 31
Final Review (Version 1)

1. Which set of numbers does -4 **not** belong to?
a. Rational Numbers b. Real Numbers c. Natural Numbers d. Integers

2. Find the absolute value of $\left| -\frac{10}{3} \right|$
a. $\frac{3}{10}$ b. $-\frac{10}{3}$ c. $-\frac{3}{10}$ d. $\frac{10}{3}$

3. Use the distributive property to clear the parenthesis: $-8(5x - 2y + 3)$
a. $-40x + 16y - 24$ b. $-40x + 16y + 24$
c. $40x - 16y + 24$ d. $-13x - 10y - 5$

4. Evaluate using the order of operations: $36 \div (-2)^2 + 4[5 - 3(8 - 9)^5]$
a. 23 b. 41 c. -1 d. 17

5. Add or Subtract as indicated. Simplify if possible: $-\frac{2}{3} + \frac{3}{4} + \frac{1}{12}$
a. $\frac{3}{2}$ b. $\frac{2}{12}$ c. $\frac{1}{6}$ d. $-\frac{1}{6}$

6. Simplify: $(7)^{-1} + 7^0$
a. -6 b. $\frac{8}{7}$ c. -7 d. $\frac{1}{7}$

7. Simplify: $(-3xy^2a^3)^3$
a. $-9x^3y^5a^6$ b. $27x^3y^6a^9$ c. $9x^3y^5a^6$ d. $-27x^3y^6a^9$

8. Simplify the expression and write the answer using only positive exponents:

$$\left(\frac{xy^4}{-3z^3}\right)^3$$

a. $-\frac{x^4y^7}{9z^6}$ b. $\frac{3x^3y^7}{27z^6}$ c. $-\frac{x^3y^{12}}{9z^9}$ d. $-\frac{x^3y^{12}}{27z^9}$

9. Express using positive exponents, then simplify if possible: $(-2)^{-5}$

a. $-\frac{1}{32}$ b. $\frac{1}{32}$ c. -32 d. 10

10. Add: $(x^2 - 6x + 9) + (-3x^2 - 5x + 2)$

a. $4x^2 - 1x + 11$ b. $-2x^2 - 11x + 11$
c. $2x^2 - 11x + 11$ d. $-2x^4 - 11x^2 + 11$

11. Subtract: $-4x^2 + 2x - (-5x^2 + 2x + 3)$

a. $-9x^2 - 3$ b. $-9x^2 + 4x - 3$
c. $x^2 - 3$ d. $x^2 + 3$

12. Multiply: $(3t - 4)(2t + 1)$

a. $6t^2 + 11t - 4$ b. $6t^2 - t - 4$
c. $6t^2 - 5t - 4$ d. $6t^2 + 5t + 4$

13. Multiply: $(2a + 5)(a^2 - 3a + 2)$

a. $2a^3 + a^2 - 11a + 10$ b. $2a^3 - a^2 - 11a + 10$
c. $a^2 - 11a + 10$ d. $2a^3 - 11a^2 - 9a + 10$

14. Evaluate the polynomial $x^2 - 6x + 9$ when $x = -3$
- a. -18 b. 36 c. 18 d. 0
15. Express the number in scientific notation. 0.00000301254
- a. 3.01254×10^{-6} b. 3.01254×10^{-5}
- c. 3.01254×10^6 d. 3.01254×10^{-7}
16. Express the number in decimal notation. 8.2641×10^7
- a. 82,641 b. 0.00000082641
- c. 8,264,100 d. 82,641,000

Use the following data set for problems 17 – 19:

Data set: 10, 12, 9, 16, 8, 10, 14, 18

17. Find the mean:
- a. 12 b. 12.125
- c. 13 d. 10
18. Find the median:
- a. 10 b. 11 c. 12 d. 11.5
19. Find the mode or modes (if any):
- a. 8 and 10 b. 11 c. 10 d. none
20. Solve for x: $6 - x = -2$
- a. $x = 8$ b. $x = -8$ c. $x = 4$ d. $x = -4$

21. Solve for q : $6q - 5 = 7 + 2q$
- a. $q = 4$ b. $q = \frac{3}{2}$ c. $q = 3$ d. $q = \frac{1}{4}$
22. Solve for c : $13 - (2c + 2) = 2(c + 2) + 3c$
- a. $c = \frac{11}{7}$ b. $c = 1$ c. $c = 5$ d. $c = -1$
23. Solve for x : $\frac{1}{3}x + \frac{4}{5} = \frac{2}{3} + \frac{2}{5}x$
- a. $x = \frac{4}{5}$ b. $x = -2$ c. $x = 2$ d. $x = 3$
24. Solve for d : $5(d - 4) = 3(d - 3) - 4$
- a. $d = -\frac{3}{2}$ b. $d = -\frac{1}{2}$ c. $d = \frac{5}{2}$ d. $d = \frac{7}{2}$
25. After clearing fractions using the Least Common Denominator (LCD) and distributing to clear parenthesis, what does the equation look like?
- $$\frac{3}{4}(3x - 1) - \frac{2}{3} = \frac{1}{6}(2x + 5)$$
- a. $27x - 9 - 8 = 4x + 10$ b. $9x - 3 - 2 = 2x + 5$
c. $27x - 3 - 24 = 24x + 60$ d. $27x - 9x - 8 = 4x + 5$
26. Solve for h : $2A = ah + bh$
- a. $h = \frac{2A}{a+b}$ b. $h = 2A - a - b$ c. $h = -\frac{2A}{a+b}$ d. $h = \frac{A}{a+b}$
27. Alvin borrowed \$7,000 from his cousin to purchase a car at a simple interest rate of 4%. How much interest will he owe his cousin after 3 years?
- a. \$ 8,400 b. \$ 280 c. \$ 840 d. \$ 84

28. Solve: $-4x > 32$

- a. $x > -8$ b. $x > 8$ c. $x < -8$ d. $x < 8$

29. Solve and graph on the number line: $n - 4 > -3$

a. $n > -7$



b. $n > 1$



c. $n < 1$



d. $n < -7$



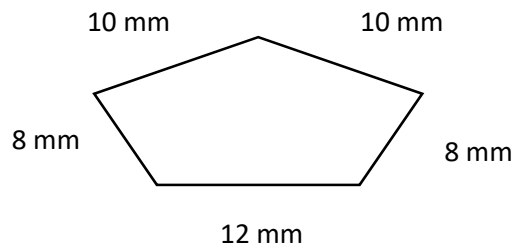
30. Solve the inequality for t : $3t - 6 < 9t + 18$

- a. $t < -4$ b. $t > 2$ c. $t \geq -4$ d. $t > -4$

31. Solve the inequality for x : $7 \leq 3x - 2$

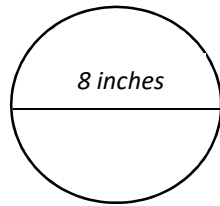
- a. $x \geq -3$ b. $x \geq 3$ c. $x \leq 3$ d. $x > 3$

32. Find the perimeter of the figure.

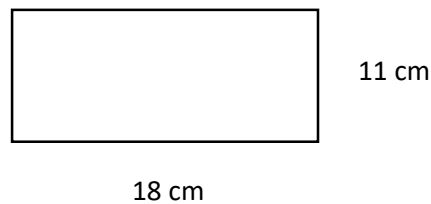


- a. 48 mm b. 20 mm
c. 50 mm d. None of the above

33. Find the circumference (C) and area (A) of the circle if we know its diameter to be 8 inches. Approximate π to be 3.14.

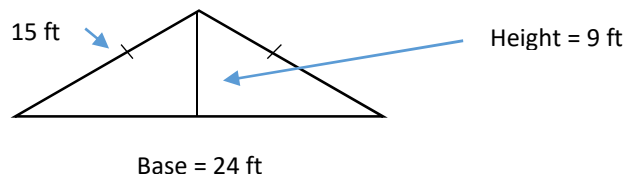


- a. $C = 50.24 \text{ in}$, $A = 200.96 \text{ in}^2$ b. $C = 25.12 \text{ in}$, $A = 64 \text{ in}^2$
 c. $C = 50.24 \text{ in}$, $A = 25.12 \text{ in}^2$ d. $C = 25.12 \text{ in}$, $A = 50.24 \text{ in}^2$
34. Find the perimeter (P) and area (A) of the rectangle.



- a. $P = 29 \text{ cm}$, $A = 198 \text{ cm}^2$ b. $P = 58 \text{ cm}$, $A = 198 \text{ cm}^2$
 c. $P = 198 \text{ cm}$, $A = 58 \text{ cm}^2$ d. $P = 60 \text{ cm}$, $A = 198 \text{ cm}^2$
35. If the perimeter of a rectangle is 32m and the length is 10m, find the width.
- a. $\text{width} = 2m$ b. $\text{width} = 6m$
 c. $\text{width} = 12m$ d. $\text{width} = 3.2m$

36. Find the perimeter (P) and area (A) of the largest triangle in the picture.

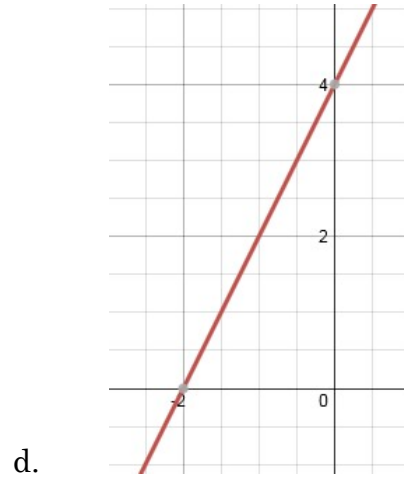
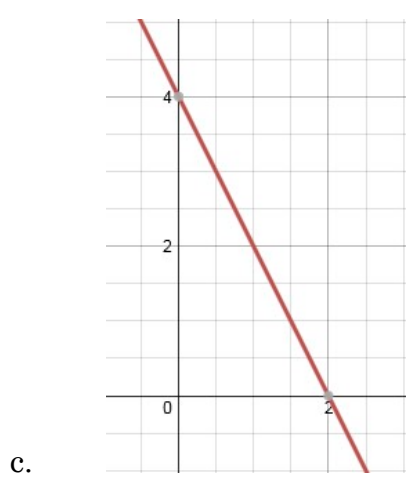
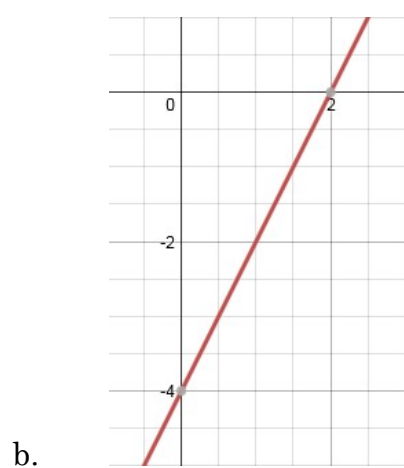
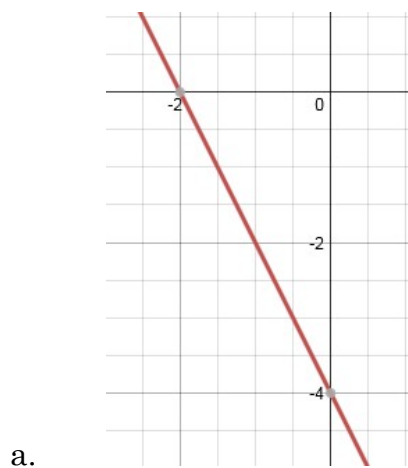


- a. $P = 54 \text{ ft}$, $A = 108 \text{ ft}^2$ b. $P = 48 \text{ ft}$, $A = 108 \text{ ft}^2$
 c. $P = 63 \text{ ft}$, $A = 216 \text{ ft}^2$ d. $P = 54 \text{ ft}$, $A = 216 \text{ ft}^2$

37. What number is 25% of 1250?
- a. 50 b. 31,250
- c. 312.5 d. $\frac{1}{50}$
38. Write the ratio using fractional notation: 130 miles to 6 gallons of gas.
- a. $\frac{65 \text{ miles}}{3 \text{ gallons}}$ b. 21.7 miles/gallon
- c. $\frac{6 \text{ gallons}}{130 \text{ miles}}$ d. $\frac{130 \text{ miles}}{6 \text{ gallons}}$
39. Find the unit price: 12 concert tickets for \$299.88
- a. \$299.88 per ticket b. \$0.04 per ticket
- c. \$12 per ticket d. \$24.99 per ticket
40. Given the following proportion, solve for p: $\frac{12}{p} = \frac{5}{7}$
- a. $p = \frac{60}{7}$ b. $p = \frac{84}{5}$ c. $p = \frac{5}{84}$ d. $p = \frac{35}{12}$
41. The base purchase price of a personal computer is \$1595. If the sales tax is 8%, what is the total price that is paid for the computer? (*Hint: Total price = base price + sales tax*).
- a. \$1722.60 b. \$127.60
- c. \$1467.40 d. \$1603.00
42. The ratio of the weight of an object on Earth to the weight of that same object on Jupiter is 2 to 5. If a hippopotamus weighs 3500 pounds (lbs) on Earth, find the weight of the hippopotamus on Jupiter.
- a. 1400 lbs b. 10,000 lbs c. 8750 lbs d. 17,500 lbs
43. In which quadrant is the point (2, - 4) located?
- a. Q I b. Q II c. Q III d. Q IV

44. Find the correct value of x so that $(x, -4)$ is a solution to $5x - 2y = 33$.
- a. $x = -5$ b. $x = -\frac{53}{2}$ c. $x = 5$ d. $x = \frac{41}{5}$
45. Find the x and y intercepts of the line: $2x - 3y = 9$
- a. $(0, -3)$ and $(\frac{9}{2}, 0)$ b. $(-3, 0)$ and $(0, \frac{9}{2})$
- c. $(0, 3)$ and $(-\frac{9}{2}, 0)$ d. $(0, 9)$ and $(9, 0)$
46. Write the equation of a horizontal line that goes through the point $(-2, 2)$.
- a. $y = -2$ b. $y = 2$ c. $x = -2$ d. $x = 2$
47. Find the slope of the line: $y = -\frac{1}{2}x + \frac{3}{4}$
- a. $m = \frac{3}{4}$ b. $m = -\frac{1}{2}$ c. $m = \frac{1}{2}$ d. $m = 2$
48. Determine whether the two lines are parallel, perpendicular, or neither.
- $y = 3x - 5$ and $3y + x = 12$
- a. Parallel b. Perpendicular c. Neither d. Not Enough Information
49. Write the equation of a vertical line that goes through the point $(-4, 3)$.
- a. $y = -4$ b. $y = 3$ c. $x = -4$ d. $x = 3$

50. Determine the graph for the given equation: $6x + 3y = 12$



Answer Key

- | | | | |
|-----|---|-----|---|
| 1. | C | 26. | A |
| 2. | D | 27. | C |
| 3. | A | 28. | C |
| 4. | B | 29. | B |
| 5. | C | 30. | D |
| 6. | B | 31. | B |
| 7. | D | 32. | A |
| 8. | D | 33. | D |
| 9. | A | 34. | B |
| 10. | B | 35. | B |
| 11. | C | 36. | A |
| 12. | C | 37. | C |
| 13. | B | 38. | A |
| 14. | B | 39. | D |
| 15. | A | 40. | B |
| 16. | D | 41. | A |
| 17. | B | 42. | C |
| 18. | B | 43. | D |
| 19. | C | 44. | C |
| 20. | A | 45. | A |
| 21. | C | 46. | B |
| 22. | B | 47. | B |
| 23. | C | 48. | B |
| 24. | D | 49. | C |
| 25. | A | 50. | C |