Online P.E.R.T. Math
Diagnostic Test

<u>Do NOT guess</u>! If you are unsure, leave the answer blank.

1. Which of the following means the same as "twenty thousand, three hundred five?"
   a. 2,035
   b. 200,305
   c. 20,350
   d. 20,305

2. What is 2,465.59 rounded to the nearest whole number?
   a. 2,460
   b. 2,465.6
   c. 2,466
   d. 2,465

3. Subtract. 9472 - 5827
   a. 4655
   b. 3645
   c. 4050
   d. 4645

4. Divide. 7,995 ÷ 39
   a. 207
   b. 25
   c. 2005
   d. 205

5. Which statement is true?
   a. $4 < -4$
   b. $-1 > 6$
   c. $2 > -9$
   d. $7 < 0$

6. Simplify. $-2-(-5)+5-(3)(4)$
   a. –17
   b. –4
   c. 70
   d. 1

7. Evaluate. $|15|-|-7|$
   a. 105
   b. –8
   c. –22
   d. 8

8. Multiply and simplify. $\frac{2}{3} \times \frac{3}{5} \times \frac{6}{8}$
   a. $\frac{36}{120}$
   b. $\frac{18}{60}$
   c. $\frac{12}{16}$
   d. $\frac{3}{10}$

9. Divide and simplify. $\frac{12}{15} \div \frac{6}{10}$
   a. $\frac{120}{90}$
   b. $\frac{4}{3}$
   c. $\frac{3}{4}$
   d. $\frac{12}{9}$

10. Add, subtract, and simplify. $\frac{2}{3} + \frac{3}{4} - \frac{1}{6}$

a. $\frac{6}{13}$

b. $A = \pi r^2 12$

c. $1\frac{1}{4}$

d. $1\frac{1}{3}$

11. Which statement is true?

a. 0.079 > 0.79

b. 0.057 > 0.28

c. 7.49 > 7.409

d. 0.0840 > 0.084

12. Write .3 as a fraction, reduce if needed.

a. $\frac{30}{100}$

b. $\frac{1}{3}$

c. $\frac{1}{30}$

d. $\frac{3}{10}$

13. Write $\frac{3}{6}$ as a decimal.

a. 3.6

b. 0.5

c. 0.05

d. 0.36

14. Simplify. 0.037 + 0.638 – 0.567

a. 0.441

b. 0.108

c. 1.242

d. 1.08

15. Multiply. (14.23)(5.2)

a. 739.96

b. 73996

c. 73.996

d. 7.3996

16. Divide. 1.488 ÷ 2.4

a. 62

b. 0.062

c. 6.2

d. 0.62

17. Write using exponential notation.

$8 \cdot 8 \cdot 8 \cdot 7 \cdot 7 \cdot 7$

a. 175,616

b. 56^3

c. 24 x 21

d. $(8^3)(7^3)$

18. Evaluate. $\left(-\frac{1}{3}\right)^3$

a. $\left(-\frac{1}{9}\right)$

b. $\frac{1}{27}$

c. $-\frac{1}{27}$

d. $-\frac{3}{9}$

19. Evaluate. $9 - 4(3 - 5)^3 + 8 \div 2 - 7$

a. –27

b. 22

c. –17

d. 38

20. Simplify. $\sqrt{49}$

a. 17

b. 6

c. 23

d. 7

21. Translate into an algebraic expression: "Twelve less than the product of six and *y*."

a. 6y – 12

b. 12 – 6y

c. y(6-12)

d. 6(y – 12)

22. Evaluate the expression $xyz^2 - xy$, when $x = 2$, $y = -3$, and $z = -2$.

a. –30

b. 24

c. 30

d. –18

23. Simplify. $-(7x - 3) - 4(3x + 2)$

a. $-19x - 5$

b. $-5x - 5$

c. $-10x + 11$

d. $19x - 11$

24. Solve for *x*. $4x - 2(6x - 8) = 12x - 8$

a. $1\frac{1}{5}$

b. $-\frac{4}{5}$

c. 6

d. $\frac{1}{6}$

25. Solve for *x*. $\frac{1}{2} - \frac{x}{3} = \frac{2x}{6}$

a. 6

b. $\frac{1}{12}$

c. 2

d. $\frac{3}{4}$

26. Translate into an equation: "Six times the sum of a number and twelve is eight less than the product of the number and nine."

a. $6n + 12 = 8 - 9n$

b. $6n + 12 = 9n - 8$

c. $6(n + 12) = 9n - 8$

d. $6(n + 12) = 8 - 9n$

27. Solve for *y*. $4x + 6y = 12$

a. $y = -\frac{2}{3}x + 12$

b. $y = -\frac{2}{3}x + 2$

c. $y = -4x + 12$

d. $y = \frac{2}{3}x + 3$

28. Write in interval notation $x \geq 3$

a. $(0,3)$

b. [0,3]

c. $[3, \infty)$

d. $(\infty, 3]$

29. Solve for *x*. $-2x + 3 > -12 + 3x$

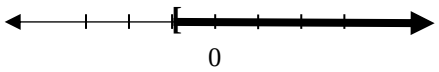
a. $x > 3$

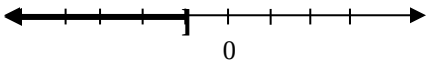
b. $x < 15$

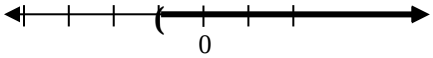
c. $x < 3$

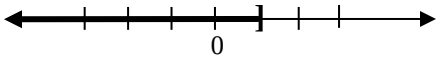
d. $x < -3$

30. Which is the graph of $x \leq -1$?

a. 

b. 

c. 

d. 

31. Write 25% as a fraction and simplify.

a. $\frac{25}{100}$

b. $\frac{5}{2}$

c. $\frac{25}{10}$

d. $\frac{1}{4}$

32. Write $\frac{1}{8}$ as a percent.

a. 0.125

b. 0.125%

c. $12\frac{1}{2}$ %

d. $1\frac{1}{4}$ %

33. An investor paid $180 for one share of stock. He sold the stock for $252. What was the percent increase in the stock price?

a. 71.4%

b. $72

c. 40%

d. 28.6%

34. A worker can assemble 7 widgets in 5 minutes. At that rate, how many minutes will it take to assemble 35 widgets?

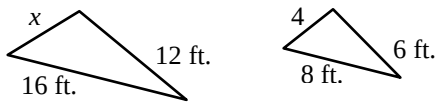
a. 35 min.

b. 49 min.

c. 25 min.

d. 50 min.

35. The triangles below are similar. Find the length of *x*.



a. 7 ft.

b. 8 ft.

c. 10 ft.

d. 6 ft.

36. Write as a unit rate: 756 miles in 6 days.

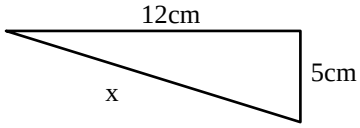
a. 126

b. $\frac{756\ mi}{6\ days}$

c. 4536 miles

d. 126 mi/day

37. What is the length of *c* in the right triangle?



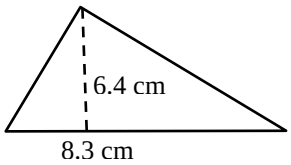
a. $\sqrt{60}$ cm

b. 25 cm

c. 17 cm

d. 13 cm

38. Find the area of the triangle.



a. 29.4 cm^2

b. 14.7 cm^2

c. 26.56 cm^2

d. 53.12 cm^2

39. Find the circumference of a circle with a radius of 3 feet.

a. 9.42 ft.

b. 18.84 ft.

c. 28.26 ft.

d. 14.13 ft.

40. Simplify. $3x^2y^3 \cdot 5x^4 y^3$

a. $8x^6y^6$

b. $2x^6y^9$

c. $15x^8y^9$

d. $15x^6y^6$

41. Simplify. $(3x^{-4}y^7)^{-3}$

a. $\frac{x^{12}}{27y^{21}}$

b. $27x^{12}y^{-21}$

c. $\frac{y^{-10}}{-27x^7}$

d. $9x^{12}y^{-21}$

42. Simplify. $\frac{-15r^8s^{-3}}{-5r^4s^6t^0}$

a. $\frac{-3r^{12}s^3}{t^0}$

b. $\frac{3r^4}{s^9}$

c. $\frac{3r^4}{s^3}$

d. $\frac{3}{r^{12}s^3}$

43. Write 0.00479 in scientific notation.

a. 4.79×10^{-3}

b. 4.79×10^{3}

c. 479×10^{-5}

d. 4.79×10^{-2}

44. Multiply the polynomials and simplify.

$(5x + 7)(2x - 3)$

a. $7x^2 - 6x + 21$

b. $10x^2 + 29x - 21$

c. $10x^2 - x - 21$

d. $7x^2 - x + 21$

45. Expand and simplify. $(2x - 3y)^2$

a. $4x^2 - 12xy + 9y^2$

b. $4x^2 - 9y^2$

c. $4x^2 - 12xy - 9y^2$

d. $4x^2 + 12xy + 9y^2$

46. Simplify. $\frac{25x^{10}y^6 - 30x^4y^2 + 10x^2y}{5x^2y}$

a. $5x^{12}y^6 - 6x^6 + 2x^4y$

b. $5x^{16}y^8 - 20xy$

c. $5x^8y^5 - 6x^2y + 2$

d. $5x^8 - 20x^2y$

47. Factor. $4a^3b + 12a^2b - 8ab$

a. $4a(a^2b + 3ab - 2b)$

b. $ab(4a^2 + 12a - 8)$

c. $4ab(a^2 + 3a - 2)$

d. $2ab(2a + 6a - 4)$

48. Solve for x. $2x^2 - 5x = 12$

a. $x = -\frac{3}{2}, 4$

b. $x = \frac{17}{2}, 12$

c. $x = -\frac{3}{2}, 0$

d. $x = 0$

49. Simplify. $\dfrac{2x^2-5x-3}{x^2-9}$

a. $\dfrac{x-3}{x+3}$

b. $\dfrac{2x+1}{x-3}$

c. $\dfrac{2x+1}{x+3}$

d. $2x+1$

50. Add and simplify. $\dfrac{x^2-7}{x+3}+\dfrac{2x+4}{x+3}$

a. $\dfrac{(x-3)(x+1)}{x+3}$

b. $x-1$

c. $\dfrac{x^2+2x-11}{x+3}$

d. $\dfrac{x-3}{3}$

51. Find the x-intercept of $3x - 7y = 14$.

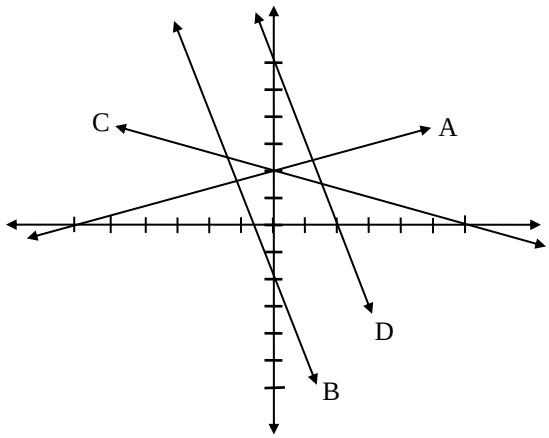
a. $(-2, 0)$

b. $(\frac{1}{2}, 0)$

c. $(\frac{14}{3}, 0)$

d. $(\frac{3}{14}, 0)$

52. Which line is the graph of $3y + x = 6$?



a. line A

b. line B

c. line C

d. line D

53. Simplify. $\sqrt{45a^7}$

a. $15a^3\sqrt{3a}$

b. $3\sqrt{5a^7}$

c. $9a^3\sqrt{5a}$

d. $3a^3\sqrt{5a}$

54. Simplify. $\sqrt{75}+\sqrt{27}$

a. $\sqrt{102}$

b. $8\sqrt{3}$

c. $3\sqrt{8}$

d. 102

55. Simplify. $3\sqrt{7}\cdot 2\sqrt{5}$

a. $5\sqrt{12}$

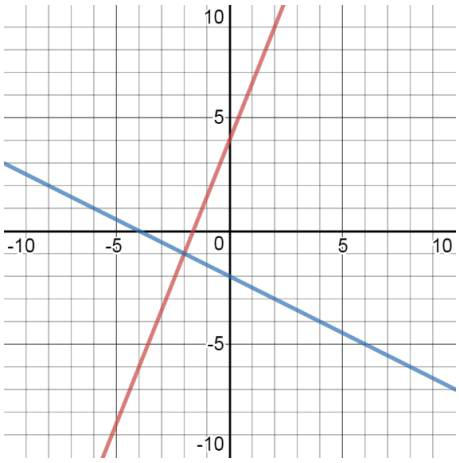
b. 210

c. $6\sqrt{12}$

d. $6\sqrt{35}$

56. Find the solution to the system of equations represented in the graph.

$$\begin{cases} y=\frac{5}{2}x+4 \\ y=-\frac{1}{2}x-2 \end{cases}$$



a. (0,4)

b. (-2,-1)

c. (-1,-2)

d. (-4,0)

57. Solve the system of linear equations.

$$\begin{cases} 2x-y=-7 \\ x+3y=0 \end{cases}$$

a. (1,-3)

b. (3,1)

c. (-3,1)

d. No solution

P.E.R.T. Math
Diagnostic Test - Answer Key

Module 1: Whole Numbers

1. d
2. c
3. b
4. d

Module 2: Signed Numbers (Integers) & Absolute Value

5. c
6. b
7. d

Module 3: Fractions

8. d
9. b
10. c

Module 4: Decimals

11. c
12. d
13. b
14. b
15. c
16. d

Module 5: Exponents, Order of Operations & Square Root

17. d
18. c
19. d
20. d

Module 6: Expressions

21. a
22. d
23. a

Module 7: Linear Equations

24. a
25. d
26. c
27. b

Module 8: Linear Inequalities

28. c
29. c
30. b

Module 9: Percent

31. d
32. c
33. c

Module 10: Ratio & Proportion

34. c
35. b
36. d

Module 11: Geometry

37. d
38. c
39. b

Module 12: Advanced Exponents & Scientific Notation

40. d
41. a
42. b
43. a

Module 13: Polynomials

44. c
45. a
46. c

Module 14: Factoring & Solving Quadratic Equations

47. c
48. a

Module 15: Rational Expressions

49. c
50. b

Module 16: Lines & Graphing

51. c
52. c

Module 17: Radicals (Optional)

53. d
54. b
55. d

Module 18: Systems of Equations (Optional)

56. b
57. c