

www.MathNotion.com

... So Much More Online!

- ✓ FREE Math Lessons
- ✓ More Math Learning Books!
- ✓ Mathematics Worksheets
- ✓ Online Math Tutors

For a PDF Version of This Book



Please Visit **www.mathnotion.com**

Contents

Chapter 1: Whole Numbers	11
Add and Subtract Integers	12
Multiplication and Division	13
Absolute Value.....	14
Ordering Integers and Numbers	15
Order of Operations	16
Factoring	17
Great Common Factor (GCF).....	18
Least Common Multiple (LCM)	19
Divisibility Rule.....	20
Answers of Worksheets	21
Chapter 2: Fractions	25
Adding Fractions – Like Denominator.....	26
Adding Fractions – Unlike Denominator	27
Subtracting Fractions – Like Denominator	28
Subtracting Fractions – Unlike Denominator.....	29
Converting Mix Numbers.....	30
Converting improper Fractions.....	31
Addition Mix Numbers	32
Subtracting Mix Numbers	33
Simplify Fractions.....	34
Multiplying Fractions	35
Multiplying Mixed Number	36
Dividing Fractions.....	37
Dividing Mixed Number.....	38
Comparing Fractions.....	39
Answers of Worksheets	40
Chapter 3: Decimal	45
Round Decimals.....	46
Decimals Addition	47
Decimals Subtraction.....	48
Decimals Multiplication.....	49
Decimal Division	50
Comparing Decimals	51
Convert Fraction to Decimal.....	52
Convert Decimal to Percent	53
Convert Fraction to Percent.....	54
Answers of Worksheets	55
Chapter 4: Equations and Inequality	59
Distributive and Simplifying Expressions	60
Factoring Expressions.....	61
Evaluate One Variable Expressions	62
Evaluate Two Variable Expressions	63
Graphing Linear Equation.....	64
One Step Equations	65

Two Steps Equations.....	66
Multi Steps Equations.....	67
Graphing Linear Inequalities.....	68
One Step Inequality.....	69
Two Steps Inequality.....	70
Multi Steps Inequality.....	71
Systems of Equations.....	72
Systems of Equations Word Problems.....	73
Finding Distance of Two Points.....	74
Answers of Worksheets.....	75
Chapter 5: Exponent and Radicals	81
Positive Exponents.....	82
Negative Exponents.....	83
Add and subtract Exponents.....	84
Exponent multiplication.....	85
Exponent division.....	86
Scientific Notation.....	87
Square Roots.....	88
Simplify Square Roots.....	89
Answers of Worksheets.....	90
Chapter 6: Ratio, Proportion and Percent	93
Proportions.....	94
Reduce Ratio.....	95
Percent.....	96
Discount, Tax and Tip.....	97
Percent of Change.....	98
Simple Interest.....	99
Answers of Worksheets.....	100
Chapter 7: Monomials and Polynomials	102
Adding and Subtracting Monomial.....	103
Multiplying and Dividing Monomial.....	104
Binomial Operations.....	105
Polynomial Operations.....	106
Squaring a Binomial.....	107
Factor polynomial.....	108
Answers of Worksheets.....	109
Chapter 8: Functions	111
Relation and Functions.....	112
Slope form.....	113
Slope and Y-Intercept.....	113
Slope and One Point.....	114
Slope of Two Points.....	115
Equation of Parallel and Perpendicular lines.....	116
Quadratic Equations - Square Roots Law.....	117
Quadratic Equations - Factoring.....	118
Quadratic Equations - Completing the Square.....	119
Quadratic Equations - Quadratic Formula.....	120
Arithmetic Sequences.....	121
Geometric Sequences.....	122
Answers of Worksheets.....	123
Chapter 9: Geometry.....	127
Area and Perimeter of Square.....	128

Area and Perimeter of Rectangle.....	129
Area and Perimeter of Triangle	130
Area and Perimeter of Trapezoid.....	131
Area and Perimeter of Parallelogram.....	132
Circumference and Area of Circle	133
Perimeter of Polygon.....	134
Volume of Cubes.....	135
Volume of Rectangle Prism.....	136
Volume of Cylinder.....	137
Volume of Spheres	138
Volume of Pyramid and Cone	139
Surface Area Cubes.....	140
Surface Area Rectangle Prism.....	141
Surface Area Cylinder	142
Answers of Worksheets	143
Chapter 10: Statistics and probability.....	145
Mean, Median, Mode, and Range of the Given Data	146
Box and Whisker Plot.....	147
Bar Graph.....	148
Histogram	149
Dot plots.....	150
Scatter Plots	151
Stem-And-Leaf Plot.....	152
Pie Graph.....	153
Probability	154
Answers of Worksheets	155
PERT Test Review	159
PERT Test Mathematics Formula Sheet.....	161
PERT Practice Test 1	163
PERT Practice Test 2	173
Answers and Explanations	183
Answer Key.....	185
PERT Practice Test 1	187
PERT Practice Test 2	193

Chapter 8: Functions

Relation and Functions

Determine whether each relation is a function. Then state the domain and range of each relation.

1)

Function:

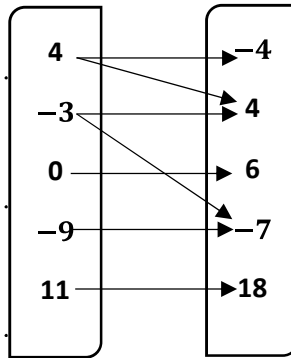
.....

Domain:

.....

Range:

.....



2)

Function:

.....

Domain:

.....

Range:

.....

x	y
1	3
4	0
-9	-2
1	-2
-10	5

3)

Function:

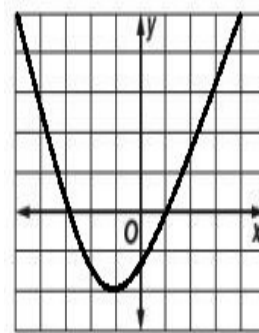
.....

Domain:

.....

Range:

.....



4) $\{(1, -1), (6, 0), (0, 8), (4, 3), (2, 5)\}$

Function:

.....

Domain:

.....

Range:

.....

5)

Function:

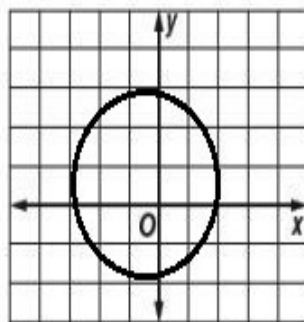
.....

Domain:

.....

Range:

.....



6)

Function:

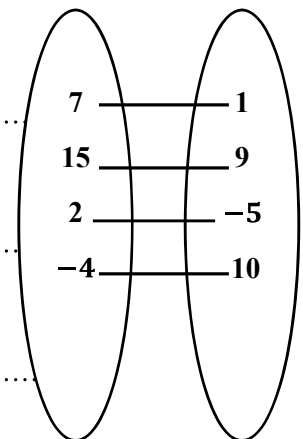
.....

Domain:

.....

Range:

.....



Slope form

Write the slope-intercept form of the equation of each line.

1) $5x + 3y = 15$

8) $7x - 5y = -3$

2) $4x + 12y = 3$

9) $-0.3x + 5y = 25$

3) $7x + y = -9$

10) $-6x + \frac{1}{2}y = 10$

4) $-3x + 8y = 5$

11) $12x + y = 0$

5) $3x - 2y = 9$

12) $9x = -45y - 10$

6) $-14x + 2y = 4$

13) $3.5x = 7y + 7$

7) $5x + y = 2$

14) $8x = -\frac{2}{5}y + 10$

Slope and Y-Intercept

Find the slope and y-intercept of each equation.

1) $y = \frac{1}{4}x + 3$

6) $y = -8x + 5$

2) $y = 9x + 5$

7) $x = -16$

3) $x - 7y = 21$

8) $y = 2x$

4) $y = 3x + 20$

9) $y - 6 = 7(x + 1)$

5) $y = 7$

10) $x = -\frac{12}{5}y - 12$

Slope and One Point

Find a Point-Slope equation for a line containing the given point and having the given slope.

1) $m = -3, (0, 1)$

14) $m = \text{undefined}, (7, -7)$

2) $m = 2, (2, 1)$

15) $m = -\frac{1}{4}, (4, 2)$

3) $m = -1, (-1, -1)$

16) $m = \frac{1}{5}, (2, 4)$

4) $m = 4, (2, 2)$

17) $m = -5, (1, 3)$

5) $m = 3, (1, 5)$

18) $m = 3, (-1, -2)$

6) $m = \frac{1}{2}, (4, 2)$

19) $m = \frac{1}{7}, (7, 1)$

7) $m = 1, (-1, -4)$

20) $m = \frac{-2}{3}, (1, -1)$

8) $m = 0, (4, -7)$

21) $m = \frac{1}{3}, (3, 3)$

9) $m = 5, (1, 0)$

22) $m = -6, (0, -2)$

10) $m = \frac{1}{7}, (-3, -2)$

23) $m = 1, (1, -5)$

11) $m = -2, (4, -1)$

24) $m = -\frac{3}{4}, (4, -4)$

12) $m = -3, (1, -3)$

25) $m = 0, (-1, 15)$

13) $m = 4, (0, 2)$

26) $m = \text{Undefined}, (-5, -6)$

Slope of Two Points

Write the slope-intercept form of the equation of the line through the given points.

1) $(3, 0), (-3, 6)$

13) $(1, 1), (-2, 13)$

2) $(4, 1), (-4, 5)$

14) $(7, 7), (-5, 10)$

3) $(5, 2), (-2, 9)$

15) $(6, 5), (-2, 13)$

4) $(1, 10), (-1, 12)$

16) $(3, 6), (8, 11)$

5) $(5, 15), (-7, 9)$

17) $(9, 0), (5, 2)$

6) $(2, 14), (-8, 4)$

18) $(1, 8), (-2, 9)$

7) $(3, 2), (-4, 16)$

19) $(4, -2), (-11, 8)$

8) $(4, 7), (-8, 10)$

20) $(3, -4), (-7, 1)$

9) $(3, 5), (4, 6)$

21) $(5, 1), (-11, 5)$

10) $(6, 2), (5, 2)$

22) $(3, -7), (7, 9)$

11) $(1, 2), (2, 4)$

23) $(4, -6), (12, 2)$

12) $(2, 5), (-4, 7)$

24) $(9, 5), (8, 4)$

Equation of Parallel and Perpendicular lines

Write the slope-intercept form of the equation of the line described.

- 1) Through: $(-2, 6)$, parallel to $y = 3x + 15$
- 2) Through: $(-1, -8)$, parallel to $y = -5x$
- 3) Through: $(-5, 5)$, perpendicular to $y = \frac{1}{3}x + 4$
- 4) Through: $(4, 2)$, parallel to $y = -7x + 10$
- 5) Through: $(-10, -1)$, parallel to $y = \frac{2}{5}x - 9$
- 6) Through: $(3, 2)$, perpendicular to $y = -\frac{1}{4}x + 8$
- 7) Through: $(3, -4)$, perpendicular to $y = -3x - 7$
- 8) Through: $(-2, 4)$, perpendicular to $y = -\frac{1}{9}x + 6$
- 9) Through: $(0, -5)$, parallel to $3y + 6x = 7$
- 10) Through: $(1, 1)$, parallel to $y = \frac{1}{8}x - 3$
- 11) Through: $(2, -2)$, parallel to $y = 3$
- 12) Through: $(5, 1)$, perpendicular to $y = \frac{4}{3}x + 1$
- 13) Through: $(-1, 8)$, perpendicular to $4y - x = 16$
- 14) Through: $(5, 7)$, parallel to $5y + x = 2\frac{1}{4}$
- 15) Through: $(2, 1)$, perpendicular to $y = 3x + 12$
- 16) Through: $(-4, 2)$, parallel to $8y - x = 10$
- 17) Through: $(0, -2)$, perpendicular to $y = -x + \frac{1}{4}$
- 18) Through: $(-3, -3)$, perpendicular to $7y - 3x - 4 = 0$

Answers of Worksheets

Relation and Functions

- 1) No, $D_f = \{4, -3, 0, -9, 11\}$, $R_f = \{-4, 4, 6, -7, 18\}$
- 2) No, $D_f = \{1, 4, -9, -10\}$, $R_f = \{3, 0, -2, 5\}$
- 3) Yes, $D_f = (-\infty, \infty)$, $R_f = \{-2, \infty\}$
- 4) Yes, $D_f = \{1, 6, 0, 4, 2\}$, $R_f = \{-1, 0, 8, 3, 5\}$
- 5) No, $D_f = [-3, 2]$, $R_f = [-2, 3]$
- 6) Yes, $D_f = \{7, 15, 2, -4\}$, $R_f = \{1, 9, -5, 10\}$

Slope form

- | | | |
|--------------------------------------|-------------------------------------|---------------------------------------|
| 1) $y = -\frac{5}{3}x + 5$ | 6) $y = 7x + 2$ | 12) $y = -\frac{1}{5}x - \frac{2}{9}$ |
| 2) $y = -\frac{1}{3}x + \frac{1}{4}$ | 7) $y = -5x + 2$ | 13) $y = 0.5x - 1$ |
| 3) $y = -7x - 9$ | 8) $y = \frac{7}{5}x + \frac{3}{5}$ | 14) $y = -20x + 25$ |
| 4) $y = \frac{3}{8}x + \frac{5}{8}$ | 9) $y = 0.06x + 5$ | |
| 5) $y = \frac{3}{2}x - \frac{9}{2}$ | 10) $y = 12x + 20$ | |
| | 11) $y = -12x$ | |

Slope and Y-Intercept

- | | | |
|------------------------------|---|---------------------------------|
| 1) $m = \frac{1}{4}, b = 3$ | 5) $m = 0, b = 7$ | 9) $m = 7, b = 13$ |
| 2) $m = 9, b = 5$ | 6) $m = -8, b = 5$ | 10) $m = -\frac{5}{12}, b = -5$ |
| 3) $m = \frac{1}{7}, b = -3$ | 7) $m = \text{undefind},$
$b: \text{no intercept}$ | |
| 4) $m = 3, b = 20$ | 8) $m = 2, b = 0$ | |

Slope and One Point

- | | | |
|-----------------------|---------------------------------------|---------------------------------------|
| 1) $y = -3x + 1$ | 8) $y = -7$ | 15) $y = -\frac{1}{4}x + 3$ |
| 2) $y = 2x - 3$ | 9) $y = 5x - 5$ | 16) $y = \frac{1}{5}x + \frac{18}{5}$ |
| 3) $y = -x - 2$ | 10) $y = \frac{1}{7}x - \frac{11}{7}$ | 17) $y = -5x + 8$ |
| 4) $y = 4x - 6$ | 11) $y = -2x + 7$ | 18) $y = 3x + 1$ |
| 5) $y = 3x + 2$ | 12) $y = -3x$ | 19) $y = \frac{1}{7}x$ |
| 6) $y = \frac{1}{2}x$ | 13) $y = 4x + 2$ | 20) $y = -\frac{2}{3}x - \frac{1}{3}$ |
| 7) $y = x - 3$ | 14) $x = 7$ | 21) $y = \frac{1}{3}x + 2$ |

PERT Practice Test 1

Mathematics

Total Number of Questions: 30 Questions

Total time: No Limit Time.

Be sure to review each answer carefully before submitting. You will not be able to go back to any questions.

You will only have access to a calculator app provided at your testing station.

Administered *Month Year*

1) Arrange the following fractions in order from least to greatest.

$$\frac{3}{7}, \frac{3}{5}, \frac{1}{8}, \frac{17}{19}, \frac{21}{22}$$

A. $\frac{1}{8}, \frac{3}{7}, \frac{3}{5}, \frac{17}{19}, \frac{21}{22}$

B. $\frac{3}{5}, \frac{3}{7}, \frac{1}{8}, \frac{17}{19}, \frac{21}{22}$

C. $\frac{21}{22}, \frac{17}{19}, \frac{3}{5}, \frac{3}{7}, \frac{1}{8}$

D. $\frac{21}{22}, \frac{17}{19}, \frac{1}{8}, \frac{3}{7}, \frac{3}{5}$

2) Elena earns \$7.50 an hour and worked 40 hours. Her brother earns \$15 an hour.

How many hours would her brother need to work to equal Elena's earnings over 40 hours?

A. 19.70

B. 20

C. 22

D. 17.30

3) In a library, 20% of the books are fiction and the rest are non-fiction. Given that

there are 1,800 more non-fiction books than fiction books, what is the total number of books in the library?

A. 9,000

B. 4,200

C. 3,000

D. 1,000

PERT Practice Test 2

Answers and Explanations

1) Answer: C

The smallest prime number is 2, and the largest even negative integer is -2 .

$$2 + 6(-2) = 2 - 12 = -10.$$

2) Answer: D

State the problem in a mathematical sentence:

$$a + 57 = 379 - 6a$$

$$a + 6a = 379 - 57$$

$$7a = 322 \rightarrow a = 46$$

3) Answer: A

$$6\frac{1}{12} - 8\frac{1}{4} + 3\frac{2}{3} = (6 - 8 + 3)\frac{1}{12} - \frac{3}{12} + \frac{8}{12} = 1\frac{1}{12} + \frac{5}{12} = \frac{13}{12} + \frac{5}{12} = \frac{18}{12} = \frac{3}{2} = 1\frac{1}{2}$$

4) Answer: A

$$|2x - 9| = 13 \rightarrow \begin{cases} 2x - 9 = 13 \rightarrow 2x = 22 \rightarrow x = 11 \\ 2x - 9 = -13 \rightarrow 2x = -4 \rightarrow x = -2 \end{cases}$$

5) Answer: C

Multiply equation (2) by 4. Add two equations [(1) +4(2)]:

$$\begin{cases} 3x - 4y = -9 \\ 8x + 4y = 20 \end{cases} \rightarrow 11x = 11 \rightarrow x = 1$$

Substitute $x = 1$ into equation (1): $3(1) - 4y = -9 \rightarrow -4y = -12 \rightarrow y = 3$

6) Answer: D

$$\sqrt[7]{5^{-14}} = \sqrt[7]{\frac{1}{5^{14}}} = \frac{\sqrt[7]{1}}{\sqrt[7]{5^{14}}} = \frac{1}{5^{\frac{14}{7}}} = \frac{1}{5^2} = 5^{-2} = \frac{1}{25}$$

7) Answer: D

$$3.54 \times 10^{-4} = 0.000354$$

8) Answer: C

$$x + 46 + 41 + 48 = 180 \rightarrow x + 135 = 180 \rightarrow x = 45$$

9) Answer: B

use the Pythagorean theorem to find the value of unknown side.

$$a^2 + b^2 = c^2 \rightarrow 13^2 = a^2 + 12^2 \rightarrow a^2 = 169 - 144 = 25 \rightarrow a = 5$$