PALM BEACH STATE COLLEGE

# MAT 0012 BASIC ALGEBRA I

## COMPREHENSIVE REVIEW

**PART I – MULTIPLE CHOICE:** Choose the correct answer for each question.

1) **Insert <, >, or = to write a true statement:**

$$-|-13| \_\_\_ -(-13)$$

A) > B) < C) =

**Evaluate each expression.**

2) $(-1)^{12}$

A) −12 B) 1
C) −1 D) 12

3) $-3^4$

A) 12 B) −12
C) −81 D) 81

**Simplify each expression.**

4) $5 \cdot 6 + 2(8 - 6) + 4$

A) 38 B) 44
C) 84 D) 42

5) $17 - (-6)^2$

A) −19 B) 53
C) 29 D) 19

6) $\dfrac{-6-27}{-3}$

A) −3 B) −7
C) −11 D) 11

7) **Find the prime factorization:** 350.

A) $2 \cdot 5 \cdot 5 \cdot 7$ B) $2 \cdot 5 \cdot 7$
C) $2 \cdot 2 \cdot 5 \cdot 5 \cdot 7$ D) $14 \cdot 5 \cdot 5$

8) **Write the fraction in lowest terms:** $\dfrac{28}{-36}$

A) 7/9 B) −7/9
C) −28/36 D) −4/9

9) **Find the LCD of the given set of fractions:**

$$\frac{3}{10}, \frac{5}{6}, \frac{4}{15}$$

A) 6 B) 15
C) 30 D) 10

10) **Write as an equivalent fraction with the given denominator:**

$$-\frac{13}{16} = \frac{?}{96}$$

A) $-\dfrac{208}{96}$ B) $-\dfrac{13}{96}$
C) $\dfrac{78}{96}$ D) $-\dfrac{78}{96}$

11) Write $5\dfrac{3}{8}$ as an improper fraction.

A) $\dfrac{43}{8}$ B) $\dfrac{40}{8}$
C) $\dfrac{43}{3}$ D) $\dfrac{40}{3}$

12) Write $\dfrac{36}{8}$ as a mixed number.

A) $4\dfrac{4}{8}$ B) $4\dfrac{1}{2}$
C) $2\dfrac{1}{4}$ D) $5\dfrac{1}{2}$

**Add or subtract as indicated.**

13) $-3 - 8$

A) 11 B) −5
C) 5 D) −11

14) $-9 - (-27)$

A) −18 B) −36
C) 18 D) 36

15) $-\frac{7}{12}+\frac{21}{24}$

A) 7/6 B) 7/24
C) 35/24 D) 35/12

16) $10\frac{1}{5}-3\frac{2}{3}$

A) $-7\frac{7}{15}$ B) $6\frac{2}{3}$
C) $6\frac{8}{15}$ D) $7\frac{1}{3}$

17) 5.32 – 65.896

A) 60.576 B) −60.576
C) 71.216 D) −71.216

**Find each product.**

18) $-3(-7)(-5)$

A) 15 B) 105
C) −105 D) −15

19) $\left(-\frac{4}{9}\right)\left(-\frac{1}{8}\right)$

A) 1/18 B) 9/32
C) −4/17 D) 4/72

20) $-5.32(38.6)$

A) −20.5352 B) 20.5352
C) 205.352 D) −205.352

**Find each quotient.**

21) $-2.7 \div 0.09$

A) −30 B) −3
C) −0.3 D) −300

22) $-\frac{3}{4}\div\left(-\frac{7}{10}\right)$

A) 14/15 B) −7/40
C) 15/14 D) −28/30

23) $2\frac{1}{5}\div 1\frac{3}{20}$

A) $\frac{23}{44}$ B) $1\frac{21}{23}$
C) $1\frac{3}{4}$ D) $1\frac{23}{21}$

24) $625 \div (-1000)$

A) −0.625 B) −0.0625
C) −6.25 D) −62.5

25) Evaluate $(x + y)^2$ when $x = -2$ and $y = 3$.

A) −1 B) 4
C) 3 D) 1

26) **Collect like terms:** $-7x - 3 + 5x - 8$

A) 2x + 11 B) −2x – 11
C) −2x + 11 D) 2x – 11

**Simplify each expression.**

27) $-3(9x + 6)$

A) −12x − 9 B) 6x + 3
C) −27x − 18 D) −45x

28) $-3 + 2(7 - 4m)$

A) 11 + 8m B) 11 – 8m
C) 11 – 4m D) 14 – 8m

**Solve each equation.**

29) $12 - 4x - 8 = -5x$

A) 20 B) 4
C) −4 D) −20

30) $-7(x - 3) = -42$

A) 3 B) 9
C) −9 D) −3

31) $h + \frac{1}{6} = \frac{3}{4}$

A) 7/12 B) 11/12
C) 7 D) 9/2

32) $-\frac{3}{5}x = -\frac{4}{9}$

A) $\frac{20}{27}$ B) $-\frac{20}{27}$
C) $-\frac{7}{45}$ D) $\frac{7}{45}$

33) **Translate into an algebraic expression:** Twelve less than ten times a number

A) $12 - 10x$ B) $10x - 12$
C) $12 - (10 + x)$ D) $10 - 12x$

34) When 24 is subtracted from six times a certain number, the result is 108. Find the number.

A) −14 B) 14
C) 42 D) 22

35) **Solve the proportion**: $\frac{3}{13} = \frac{x}{39}$

A) 1 B) 13
C) 1/9 D) 9

36) If a spring stretches 7 meters when a 8-kilogram weight is attached to it, how much will it stretch when a 24-kilogram weight it attached to it?

A) 21 meters B) 23 meters
C) 24 meters D) 20 meters

37) Write 35.3% as a decimal.

A) 0.0353 B) 3.53
C) 0.353 D) 353

38) Write 15% as a fraction in lowest terms.

A) 3/20 B) 3/25
C) 1/5 D) 3/5

39) Write 0.875 as a percent.

A) 87.5% B) 8.75%
C) 87% D) 875%

40) Write $\frac{4}{25}$ as a percent.

A) 0.16% B) 16%
C) 6.25% D) 625%

41) 18 is what percent of 45?

A) 2.5% B) 4%
C) 40% D) 25%

42) **Find the square root:** $\sqrt{81}$

A) 3 B) $\sqrt{3}$
C) 27 D) 9

43) Determine whether the given ordered pair is a solution of the given equation:

$4x + 2y = -2$ $(-2, 3)$

A) No B) Yes

**PART II – WORKED PROBLEMS:** Show all work where necessary.

**Simplify each expression.**

1) $12^2 + 7 \cdot 8 - (12 + 4 \cdot 3)$

2) $4 \cdot (3 + 4)^2 - 2(5 - 3)^3$

3) $-81 \div 3 + \{4 \cdot [18 - (3 \cdot 2)]\}$

4) $18 - |8 - 12| \cdot 6$

5) $\dfrac{-32 \cdot 16 \div 4^2}{6 \cdot 36 - 216}$

6) Subtract −8 from −12.

7) **Simplify:** 24 + (−18) −13 − (−6)

8) **Add:** $\dfrac{5}{6} + \dfrac{7}{12} - \dfrac{4}{15}$

9) **Subtract:** $-\dfrac{1}{8} - \left(-\dfrac{2}{5}\right)$

10) **Multiply:** −4(−3)(−7)(−2)

11) **Divide:** −128 ÷ (−16) ÷ (−4)

12) **Simplify:** $14.6 \cdot \dfrac{9}{25} \div 0.5$

13) Evaluate $2x^2 + 5x - 10$ for x = –3

14) **Combine:** 24x – 8y + 15 – 19x – 10 – 2y

**Simplify each expression.**

15) −8(−6x − 9y + 3)

16) $4 - 3(3 + x) - 5x$

17) $-2(x + 5) - (3x - 6)$

**Solve each equation.**

18) 5(z – 4) = 9(z – 2)

19) 8 – 4(x + 3) = 7 – 3(x + 4)

20) −0.06y − 0.14(50 − y) = 0.03y

21) $\dfrac{1}{2}r + 2 = \dfrac{1}{6}r + \dfrac{4}{3}$

**Solve each problem.**

22) A 24-inch board is cut into two pieces so that the second piece is five times as long as the first piece. How long is each piece?

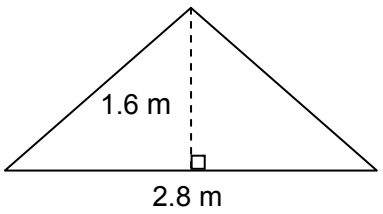
23) Find the length of a rectangular parking lot with a perimeter of 94 meters if the length is 5 meters more than the width.

24) A car rental agency rents a compact car at a daily rate of $36.20 plus 20 cents per mile. If you rent a car for one day, how many miles can you drive on a budget of $80?

25) Elaine's salary last year was $45,000. This year she received a 5% raise. What is her current salary?

26) By switching service providers, a family's telephone bill decreased from $60 a month to $45 a month. What was the percent decrease?

27) Find the area of the triangle shown below.



28) The bar graph below shows the number of boxes of Girl Scout cookies sold by a local troop over a six-day period. Use this graph to answer the following questions.

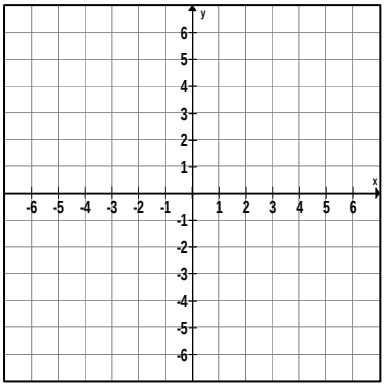

A) How many more boxes of cookies were sold during week 4 than week 3?

B) What was the average number of boxes sold during the six-week period? (Round the answer to the nearest whole number.)

29) Find the square root: $\sqrt{\frac{9}{25}}$

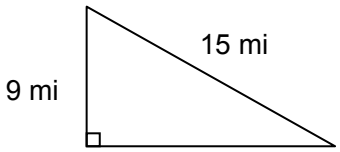
30) Plot the points corresponding to the following ordered pairs:

**A:** (−2, 5); **B:** (3, −4); **C:** (0, −3); **D:** (−4, −5)




31) Complete the ordered pair solutions for the equation y = −x + 5: (1, ), ( , 7), (3, ).

32) Find the unknown length of the right triangle.



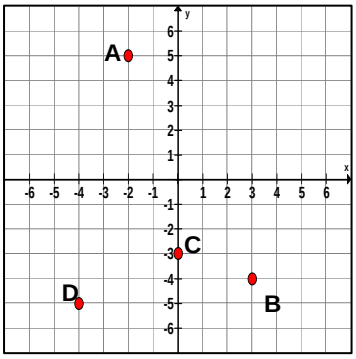
## Answer Key

### Part I – Multiple Choice

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

### Part II – Worked Problems

1) 176
2) 180
3) 21
4) −6
5) Undefined
6) −4
7) −1
8) 23/20
9) 11/40
10) 168
11) −2
12) 10.512
13) −7
14) 5x – 10y + 5
15) 48x + 72y – 24
16) −8x −5
17) −5x – 4
18) −1/2
19) 1
20) 140
21) −2
22) 4 inches; 20 inches
23) 26 meters
24) 219 miles
25) $47,250
26) 25%
27) 2.24 $m^2$
28) A) 25 boxes
B) 27 boxes
29) 3/5
30)




31) (1, 4); (−2, 7); (3, 2)
32) 12 miles