

### Pre-Algebra Competency Exam

To receive the full benefit of this test, watch the student to ensure he has mastered the concepts presented in Pre-Algebra.

If he demonstrates proficiency, he is ready to move on to Algebra 1.

If he struggles with the material on this exam, he should begin in Pre-Algebra.

1)  $(-8) + (-25) =$

2)  $(-7) \times (-15) =$

3)  $(11) - (-6) =$

4)  $(-45) \div (9) =$

*Simplify.*

5)  $-1^3$

6)  $-(5)^2$

7)  $(-8)^2$

8)  $(-\frac{2}{3})^2$

*Write in exponential notation.*

9) 95.214

*Write in standard notation.*

10)  $1 \times 10^3 + 8 \times 10^2 + 2 \times 10^1 + 5 \times 10^0 + 6 \times \frac{1}{10^1}$

*Simplify each expression.*

11)  $\sqrt{100} =$

12)  $\sqrt{Y^2} =$

*Simplify and solve for the unknown. Use order of operations as needed. Check your work.*

13)  $8 \cdot 2 + 5^2 - Y = 2(Y + 1) + 6$

14) Check

15)  $8M - 4M - 6 - 3 + 5M = 8^2 - 1$

16) Check

17)  $(-3)^2 \div 9 + 6 = D$

18) Check

*Solve for the unknown.*

19)  $\frac{1}{8} = \frac{7}{Y}$

20)  $\frac{11}{12} = \frac{A}{48}$

- 21) Allen has a debt of \$500. He owes equal amounts to ten different people. Express his debt to one person as a negative number.
- 22) If Silas added 5 years to his age, he would be 39. How old is Silas now? Write as an equation and solve.
- 23) Three times a number, plus eight, equals two times the number, plus ten. Write an equation and find the number.
- 24) A triangle has sides of 3 inches, 4 inches and 5 inches. Is it a right triangle?
- 25) One out of eight students has red hair. If there are twenty-four students, how many have red hair?
- 26) A room is 15 feet long, 13 feet wide, and 10 feet high. The walls, ceiling, and floor are all to be painted the same color. How many square feet are to be painted?

# Solutions

- 1) -33  
2) 105  
3) 17  
4) -5  
5) -1  
6) -25  
7) 64  
8)  $\frac{4}{9}$   
9)  $9 \times 10^1 + 5 \times 10^0 + 2 \times 10^{-1} + 1 \times 10^{-2} + 4 \times 10^{-3}$   
10) 1,825.6  
11)  $\pm 10$   
12)  $\pm Y$   
13)  $8 \cdot 2 + 5^2 - Y = 2(Y + 1) + 6$   
 $16 + 25 - Y = 2Y + 2 + 6$   
 $41 - Y = 2Y + 8$   
 $33 = 3Y$   
 $11 = Y$   
14)  $8 \cdot 2 + 5^2 - (11) = 2((11) + 1) + 6$   
 $16 + 25 - (11) = 2(11) + 2 + 6$   
 $41 - (11) = 22 + 8$   
 $30 = 30$   
15)  $8M - 4M - 6 - 3 + 5M = 8^2 - 1$   
 $9M - 9 = 64 - 1$   
 $9M = 63 + 9$   
 $9M = 72$   
 $M = 8$   
16)  $8(8) - 4(8) - 6 - 3 + 5(8) = 8^2 - 1$   
 $64 - 32 - 9 + 40 = 64 - 1$   
 $63 = 63$   
17)  $(-3)^2 \div 9 + 6 = D$   
 $9 \div 9 + 6 = D$   
 $1 + 6 = D$   
 $7 = D$   
18)  $(-3)^2 \div 9 + 6 = (7)$   
 $9 \div 9 + 6 = (7)$   
 $1 + 6 = (7)$   
 $7 = (7)$   
19)  $Y = 56$   
20)  $12A = 528$   
 $A = 44$   
21)  $\$-500 \div 10 = \$-50$   
22)  $A + 5 = 39$   
 $A + 5 - 5 = 39 - 5$   
 $A = 34$   
23)  $3X + 8 = 2X + 10$   
 $3X = 2X + 2$   
 $X = 2$   
24)  $3^2 + 4^2 = 5^2$   
 $9 + 16 = 25$   
 $25 = 25; \text{ yes}$   
25)  $\frac{1}{8} = \frac{X}{24}$   
 $8X = 24$   
 $X = 3 \text{ students}$   
26)  $2(15 \times 13) + 2(15 \times 10) + 2(13 \times 10) =$   
 $2(195) + 2(150) + 2(130) =$   
 $390 + 300 + 260 = 950 \text{ sq. ft.}$