Name: _____ Date: _____

1. Translate the following into a variable expression.
   three less than the product of a number and ten
   A) $10-3y$
   B) $3-10y$
   C) $3y-10$
   D) $10y-3$
   E) $3+10y$

2. Translate the following into a variable expression. Then simplify.
   three less than the total of a number and six
   A) $(p+6)-3;\quad p-3$
   B) $(p+6)-3;\quad p+3$
   C) $3-(p+6);\quad 3-p$
   D) $3+(p+6);\quad 9+p$
   E) $(p+6)-3;\quad p-3$

3. Translate the following into a variable expression. Then simplify.
   a number added to the difference between twice the number and five
   A) $y+(2y-5);\quad 3y+5$
   B) $y+(2y+5);\quad 3y+5$
   C) $y+(2y-5);\quad y-5$
   D) $y+(2y-5);\quad 3y-5$
   E) $y+(5-2y);\quad 5-y$

4. Translate the following into a variable expression. Then simplify.
the quotient of four more than twice a number and the number

A) $\frac{4x+2}{x}$; $4+\frac{2}{x}$

B) $\frac{2x+4}{x}$; $2+\frac{4}{x}$

C) $\frac{2x-4}{x}$; $2-\frac{4}{x}$

D) $\frac{2x}{x}+4$; $2+4$

E) $\frac{x}{2x+4}$; $2+\frac{x}{4}$

5. Translate the following into a variable expression.
the sum of the square of a number and twice the number

A) $z^2 \div 2z$; $z \div 2$

B) $z^2 - 2z$; $z(z-2)$

C) $(z+2)^2$; z^2+4

D) $(z+2)^2$; z^2+4z+4

E) z^2+2z; $z(z+2)$

6. Translate the following into a variable expression. Then simplify, if necessary.
a number added to the product of twenty and the number

A) $20+a$

B) $20+a^2$

C) $(20a)a$; $20a^2$

D) $20a+a$; $21a$

E) $20a+a$; $20+a$

7. Translate the following into a variable expression. Then simplify, if necessary.
a number increased by the total of the number and ten

A) $y+(y+10)$; $2(y+10)$

B) $y+10$

C) $y+(y-10)$; $2y-10$

D) $y(y+10)$; y^2+10y

E) $y+(y+10)$; $2y+10$

8. Translate the following into a variable expression. Then simplify.
   ten more than the sum of a number and five
   A) $(5-p)+10;\ 15-p$
   B) $(5+10)p;\ 15p$
   C) $5p+10$
   D) $(5+p)+10;\quad p+15$
   E) $(p-5)-10;\quad p-15$

9. Translate the following into a variable expression. Then simplify.
   a number decreased by the difference between ten and the number
   A) $p-(10-p);\ 2p-10$
   B) $p-(p-10);\ 10$
   C) $p-(10+p);\ -10$
   D) $(10-p)-p;\ 10-2p$
   E) 0

10. Translate the phrase into a mathematical expression.
    The cube of a number
    A) $x+3$
    B) $3x$
    C) $\frac{x}{3}$
    D) 3^x
    E) x^3

11. Translate the phrase into a mathematical expression.
    8 less than some number
    A) $x-8$
    B) $x+8$
    C) $8-x$
    D) $-8-x$
    E) $\frac{x}{8}$

12. Translate the phrase into a mathematical expression.
    The difference between a number and 12
    A) $-12-x$
    B) $x+12$
    C) $12-x$
    D) $x-12$
    E) $\frac{x}{12}$

13. Translate the phrase into a mathematical expression.
    –6 times some number
    A) $x+6$
    B) $-6x$
    C) -6^x
    D) $\frac{6}{x}$
    E) $-\frac{x}{6}$

14. Translate the phrase into a mathematical expression.
    The quotient of 2 and a number
    A) $2x$
    B) $2-x$
    C) 2^x
    D) $\frac{2}{x}$
    E) $\frac{x}{2}$

15. The sum of two numbers is sixty. Using x to represent the smaller of the two numbers, translate "the difference between five more than the larger number and twice the smaller number" into a variable expression in x. Then simplify.
    A) $(60-x+5)+2x;\ 65+x$
    B) $(60-x+5)-2x;\ 65-3x$
    C) $(60-x-5)-2x;\ 55-3x$
    D) $(60-x-5)+2x;\ 55+x$
    E) $(5-x-60)+2x;\ -55+x$

16. The sum of two numbers is eighty-eight. Using x to represent the larger of the two numbers, translate "the difference between ten more than twice the larger number and the sum of the smaller number and one" into a variable expression in x. Then simplify.
    A) $(2(88-x)+1)-(x+10);\ -3x+167$
    B) $(2x+1)-(88-x+10);\ 3x-97$
    C) $(2(88-x)+10)-(x+1);\ -3x+185$
    D) $(2x+10)-(88-x+1);\ 3x-79$
    E) $(2(10-x)+88)-(x+1);\ -3x+107$

17. ***Telecommunications*** In 1951, phone companies began using area codes. According to information found at www.area-codes.com, at the beginning of 2004 there were 205 more area codes than there were in 1951.

    Express the number of area codes in 2004 in terms of the number of area codes in 1951.
    A) Number of area codes in 1951: a Number of area codes in 2004: $a + 205$

    B) Number of area codes in 1951: a Number of area codes in 2004: $a - 205$

    C) Number of area codes in 1951: $a + 205$ Number of area codes in 2004: a

    D) Number of area codes in 1951: a Number of area codes in 2004: 205

    E) Number of area codes in 1951: 205 Number of area codes in 2004: a

18. ***Sports*** A halyard 10 ft long was cut into two pieces of different lengths.

Use one variable to express the lengths of the two pieces.

A) Length of one piece: S Length of second piece: $S + 10$

B) Length of one piece: S Length of second piece: $10 - S$

C) Length of one piece: $S + 10$ Length of second piece: S

D) Length of one piece: S Length of second piece: 10

E) Length of one piece: 10 Length of second piece: S

19. ***Mixtures*** A mixture of candy contains 2 lb more milk chocolate than caramel. Express the amount of milk chocolate in the mixture in terms of the amount of caramel, c, in the mixture.

A) Caramel: c Milk chocolate: $c - 2$

B) Caramel: c Milk chocolate: $c + 2$

C) Caramel: c Milk chocolate: c

D) Caramel: $c + 2$ Milk chocolate: c

E) Caramel: $c - 2$ Milk chocolate: c

20. ***Investments*** A financial advisor invested \$21,000 in two accounts. If one contained x dollars, express the amount in the second account in terms of x.

A) \$21,000 + x
B) \$21,000 x
C) \$$x$ - 21,000
D) \$21,000 - x
E) \$$x$/21,000

Answer Key

1. D
2. B
3. D
4. B
5. E
6. D
7. E
8. D
9. A
10. E
11. A
12. D
13. B
14. D
15. B
16. D
17. A
18. B
19. B
20. D