

All exam answers are to be in simplest form. No calculators may be used.  
 No notes, no books, no homework may be used while taking this exam.  
 Use blank spaces on the exam to show work. Attach all scratch paper to the exam.

Solve.

- 1) Find the average of -8, -12, 0, and 8.

$$\begin{array}{r} -8 \\ -12 \\ \hline -20 \end{array} + \begin{array}{r} 0 \\ 8 \\ \hline 8 \end{array} = \frac{-12}{4} = -3$$

four  
data values

sum the data values and divide by the number of data values

- 2) Drew has \$134 in his checking account. He writes a check for \$74, withdraws \$40 from an ATM, and then deposits \$21. Represent the new balance in his account by an integer.

$$\begin{array}{r} 134 \\ - 74 \\ \hline 60 \\ - 40 \\ \hline 20 \\ + 21 \\ \hline 41 \end{array}$$

new balance \$41

checks are negative  
 withdraws are negative  
 deposits are positive

Translate the following phrase into a mathematical expression. Use x to represent "a number."

- 3) The product of a number and 6  
 $x6$  or  $6x$

Simplify the expression.

4)  $-14 + (+22) = +8$  Change to adding the opposite signs are different so subtract and keep the sign of the larger

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5)  $(-13) \cdot (-15) = +195$  signs are same so positive

$$\begin{array}{r} 15 \\ 13 \\ \hline 195 \end{array}$$

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6)  $(-12) \div (-6) = 2$  signs are same so positive

$$\begin{array}{r} 45 \\ 15 \\ \hline 195 \end{array}$$

7)  $-6 + 5 = -1$  signs different so subtract and keep sign of larger

8)  $-3^2 - 4^2$   
 $-9 - 16$   
 $-25$

$-3^2 = -9$   
 $-4^2 = -16$   
 no parentheses

9)  $15 - |-13|$   
 $15 - 13$   
 $2$

absolute value is always positive

10)  $(3-7)^2 \div (3-2)^4$   
 $(-4)^2 \div (1)^4$   
 $16 \div 1 = 16$

work parentheses first  
 $(-4)^2 = (-4) \cdot (-4) = 16$   
 $(1)^4 = (1) \cdot (1) \cdot (1)(1) = 1$

11)  $|-38| + (-20)$   
 $38 + -20 = 18$

12)  $-9 + 90 \div (-6)$   
 $-9 - 15$   
 $-24$

13)  $(2-10)^2 \cdot (5-3)^3$   
 $(-8)^2 \cdot (2)^3$   
 $64 \cdot 8 = 512$

$(-8)^2 = (-8) \cdot (-8)$   
 $2^3 = 2 \cdot 2 \cdot 2$

|   |     |
|---|-----|
| 3 | 64  |
|   | 8   |
|   | 512 |

14)  $(-9) + 180 \div (-9)$   
 $-9 - 20$   
 $-29$

make sure to work division first

15)  $(-2)^2 - 3^2$

$4 - 9$   
 $-5$

16)  $|11| \cdot |-24|$

$11 \cdot 24 = 264$

$\begin{array}{r} 24 \\ 11 \\ \hline 24 \\ 24 \\ \hline 264 \end{array}$

17)  $(-4) + (-9) = -13$

18)  $-6 + (-32) - 11 + 6$

$-38 - 11 + 6$   
 $-49 + 6 = -43$

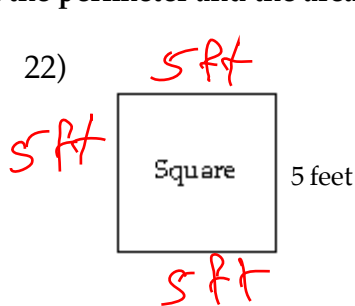
19)  $2 \cdot (-5) = -10$

20)  $(-4)^3 - 30 \div (-5)$

$-64 - 30 \div -5$   
 $-64 + 6 = -58$

21)  $6 + 23 = -17$

Find the perimeter and the area of the figure. Use proper labels for your answers.



perimeter area

$\begin{array}{r} 5 \\ 5 \\ 5 \\ 5 \\ + 5 \\ \hline 20 \end{array}$

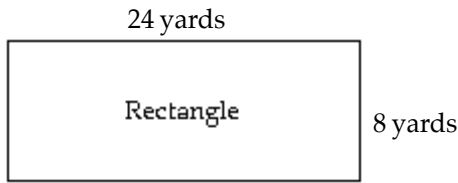
$\begin{array}{r} 5 \\ \times 5 \\ \hline 25 \end{array}$

Perimeter = 20 ft

Area = 25 ft<sup>2</sup>

perimeter is units  
Area is units squared

23)



Perimeter

$$\begin{array}{r} 24 \\ 24 \\ 8 \\ 8 \\ \hline 64 \end{array}$$

$$\begin{array}{r} 3 \\ 24 \\ 8 \\ \hline 192 \end{array}$$

Perimeter = 64 yds  
Area = 192 yds<sup>2</sup>

Evaluate the expression for the given replacement values.

24)  $6x + 3y - 10z$  for  $x=5, y=-5, z=-2$

$$\begin{array}{r} 6(5) + 3(-5) - 10(-2) \\ 30 - 15 + 20 \\ 15 + 20 = 35 \end{array}$$

25)  $12 - y^2$  for  $y=-8$

$$\begin{array}{r} 12 - (-8)^2 \\ 12 - 64 = -52 \end{array}$$

26)  $2x + y$  for  $x=-7, y=5$

$$\begin{array}{r} 2(-7) + 5 \\ -14 + 5 = -9 \end{array}$$

27)  $|x| + |y| + |z|$  for  $x=-19, y=13, z=-1$

$$\begin{array}{r} |-19| + |13| + |-1| \\ 19 + 13 + 1 \\ 32 + 1 = 33 \end{array}$$

Absolute value is always positive

28)  $4y^2$  for  $y=4$

$$4(4)^2 = 4(16) = 64$$

29) 56 subtracted from a number

$$x - 56$$

Note the use of from changes the order.