

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.

Simplify the expression.

- 1) $-7 + 2 = -5$ Signs are different so subtract and take the sign of the larger
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- 2) $9 + 23 = -14$ Change to adding the opposite. Signs different so subtract + keep sign of larger
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- 3) $6 \cdot (-11) = -66$ signs different so negative
-
- 4) $(-15) \div (-3) = 5$ signs same so positive
-
- 5) $(-3) + (-7) = -10$ signs same so add + keep the sign
-
- 6) $-12 + (+23) = 11$ Change to adding the opposite. Signs different so subtract and keep the sign of the larger
-
- 7) $(-4) \cdot (-5) = 20$
-
- 8) $|-33| + (-6)$
 $33 + -6 = 27$ Absolute value is always positive
- 9) $8 - |-2|$
 $8 - 2 = 6$
- 10) $|7| \cdot |-18|$
 $7 \cdot 18 = 126$ $\begin{array}{r} 5 \\ 18 \\ \underline{7} \\ 126 \end{array}$
- 11) $(-16) + 90 \div (-9)$
 $\begin{array}{r} 1 \\ -16 + 70 \\ \hline -26 \end{array}$

$$12) \quad -7 + (-33) + 12 + 6$$

$$\quad -40 + 12 + 6$$

$$\quad -28 + 6 = -22$$

$$13) \quad (-2)^3 - 15 \div (-3)$$

$$\quad -8 - 15 \div -3$$

$$\quad -8 + 5$$

$$\quad -3$$

$(-2)^3 = (-2) \cdot (-2) \cdot (-2)$
Exponents then divide
then add/subtract

$$14) \quad (3-8)^2 \cdot (8-6)^3$$

$$\quad (-5)^2 \cdot (2)^3$$

$$\quad 25 \cdot 8$$

$$\quad 200$$

work parentheses
then exponents
then multiply

$$15) \quad (4-7)^2 \div (4-3)^3$$

$$\quad (-3)^2 \div (1)^3$$

$$\quad 9 \div 1 = 9$$

$(-3)^2 = (-3) \cdot (-3)$
 $(1)^3 = 1 \cdot 1 \cdot 1$

$$16) \quad (-9)^2 - 3^2$$

$$\quad 81 - 9$$

$$\quad 72$$

$$-3 = -9$$

$$17) \quad -8 + 180 \div (-9)$$

$$\quad -8 + -20$$

$$\quad -28$$

make sure to
divide first

$$18) \quad -8^2 - 9^2$$

$$\quad -64 - 81 = -145$$

Evaluate the expression for the given replacement values.

19) $2x + y$ for $x = -5, y = 3$

$$2(-5) + 3$$

$$-10 + 3 = -7$$

20) $|x| + |y| + |z|$ for $x = -19, y = 13, z = -2$

$$|-19| + |13| + |-2|$$

$$19 + 13 + 2 = 34$$

absolute value
is always positive

21) $16 - y^2$ for $y = -8$

$$16 - (-8)^2$$

$$16 - 64 = -48$$

use parentheses to
group the digit &
sign $(-8) \cdot (-8) = 64$

22) $6y^2$ for $y = 4$

$$6(4)^2 = 6 \cdot 16 = 96$$

23) $6x + 3y - 10z$ for $x = 6, y = -8, z = -1$

$$6(6) + 3(-8) - 10(-1)$$

$$36 - 24 + 10$$

$$12 + 10 = 22$$

Solve.

24) Drew has \$135 in his checking account. He writes a check for \$67, withdraws \$40 from an ATM, and then deposits \$34. Represent the new balance in his account by an integer.

$$\begin{array}{r} 135 \\ -67 \\ \hline 68 \\ -40 \\ \hline 28 \\ +34 \\ \hline 62 \end{array}$$

checks are
negative

withdraws
negative
deposits
positive

new Balance \$62

25) Find the average of -28, -15, 0, and 7.

$$\begin{array}{r} -28 \\ -15 \\ \hline -43 \end{array} + \begin{array}{r} 0 \\ 17 \\ \hline 17 \end{array} = \begin{array}{r} 343 \\ -7 \\ \hline 36 \end{array}$$

$$\frac{-36}{4} = -9$$

four data values

The sum of the data values divided by the number of data values.

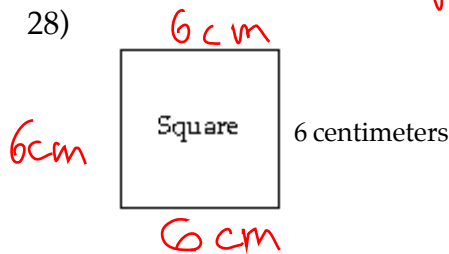
Translate the following phrase into a mathematical expression. Use x to represent "a number."

26) The product of a number and 2 = $2x$

27) 57 subtracted from a number = $x - 57$

note how from changes the order

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



perimeter

$$\begin{array}{r} 6 \\ 6 \\ 6 \\ 6 \\ \hline 24 \end{array}$$

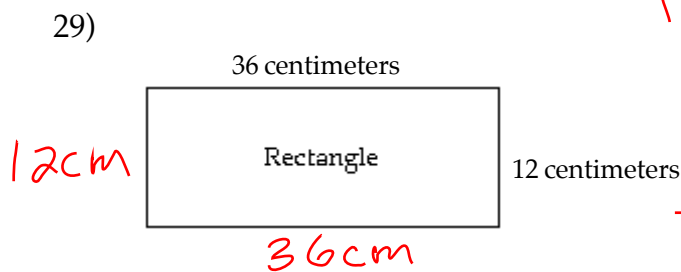
area

$$\begin{array}{r} 6 \\ \times 6 \\ \hline 36 \end{array}$$

Perimeter = 24 cm

Area = 36 cm²

Perimeter is units
Area is units squared



perimeter

$$\begin{array}{r} 36 \\ 36 \\ 12 \\ 12 \\ \hline 96 \end{array}$$

Perimeter = 96 cm

area

$$\begin{array}{r} 36 \\ \times 12 \\ \hline 72 \\ 36 \\ \hline 432 \end{array}$$

Area = 432 cm²