Intermediate Algebra Questions (worksheet 2)

Q1. Choose the correct answer.

(a) If \( x = -2 \) and \( y = -1 \), then \( x^3 - 2y = \)

A. 6   
B. -10  
C. -6  
D. 10  

(b) \( \left( \frac{1}{-3} \right)^{-2} = \)

A. \( \frac{1}{9} \)  
B. 9  
C. 6  
D. \( -\frac{1}{9} \)  

(c) The average winter temperature in Alaska is \( -30^\circ C \), and in Cairo it is \( 15^\circ C \). How much warmer is it in Cairo than in Alaska?

A. \( 45^\circ C \)  
B. \( 15^\circ C \)  
C. \( -45^\circ C \)  
D. \( -15^\circ C \)  

(d) \( 2^8 \cdot 2^8 = \)

A. \( 4^{16} \)  
B. \( 2^{64} \)  
C. \( 4^8 \)  
D. \( 2^{16} \)  

(e) Which property is used to write \( 2x + 2y = 2(x + y) \)?

A. Commutative property  
B. Distributive property  
C. Multiplicative inverse property  
D. Associative property  

(f) Write an inequality that describes the situation:
A. \( L = 32 \text{cm} \)  
B. \( L > 32 \)  
C. \( L \geq 32 \text{cm} \)  
D. \( L \leq 32 \text{cm} \)

(g) The equation \( mx - 7 = 3 - 5(x + 2) \) is an identity if \( m = \) 

A. 5  
B. -5  
C. any real number  
D. 0

(h) Evaluate \( \frac{3}{(-5) \cdot 0} \) 

A. \( \frac{3}{(-5)} \)  
B. 0  
C. undefined  
D. 3

(i) The multiplicative inverse of \( \frac{10^{-4}}{10^{-6}} \) 

A. \( 10^{-2} \)  
B. 0  
C. \( 10^{-6} \)  
D. \( 10^2 \)

(j) The scientific notation of 0.000000013 is 

A. \( 1.3 \times 10^{-6} \)  
B. \( 1.3 \times 10^{-7} \)  
C. \( 1.3 \times 10^{-8} \)  
D. \( 1.3 \times 10^{-9} \)
Q2. Evaluate the following expressions:

a. \( 9 - 7(12 - 5^2) \)

b. \( \sqrt{8 \cdot 9 \div 2} - 11 - 51 \)

c. \( (-2)^4 + 4|7 - 4(4 - 7)| \)
Q3. Simplify the following expressions:

a. \((-8a^2b^{-3})^2\)

b. \(\frac{(c^5d^3)(c^3d^4)}{-5c^6d^3}\)

c. \(\frac{(16x^2y^{-3})^3(-2x^{-5}y^2)^0}{64(xy)^5}\)
Q4. Simplify the following expressions:

a. $15p - 2(6p^2 - 15p + 24) + 8p^2 + 20$

b. $(5 - x(5 - 2) + 3x)^2$

Q5. Solve the following equations.

a. $8 - 2(1 + 7x) - 6(-7 - x) = 36$

b. $\frac{x + 2}{6} - \frac{x - 3}{3} = \frac{x}{6} + 2$
Q6. Solve the following inequalities and write the solution set in interval notation and graph it.

a. \(2 + 3(x - 1) < -2x + 4\).

b. \(-4 < 2x - 4 \leq 2\).

Q7. Find the value of K so that the two equations given below, have the same solution.

\[x + 3 = 4\]

\[2x - K = 5\]
Q8. Mr Rich wants to sell his villa and get 2,880,000 $. The agent charges 10% of the selling price.

a What should the selling price be?

b What would be the agent’s commission?

Q9. A small ship and a large ship left Port and sailed in opposite directions. After 9 hours, the distance between them was 585 km. The speed of the large ship was 40 km/hr. Find the speed of the small ship.