

Comparing Expressions

A. Fill in the Blanks

1. To compare $3x + 4$ and $5x$ for $x = 2$, you must first _____ the value of x into each expression.
2. If Expression A evaluates to -8 and Expression B evaluates to -10 , then Expression A is _____ than Expression B.
3. For $n = 5$, the expression $4(n-1)$ evaluates to _____, and $3n + 1$ evaluates to _____, so the expressions are equal.
4. For any positive value of p , the expression $p + 10$ will always be greater than $p +$ _____. (Use a number greater than 10). Example answer: 9
5. The three symbols used to compare the values of expressions are _____, _____, and _____.

B. Match the comparison problem in Column A with the correct symbol in Column B.

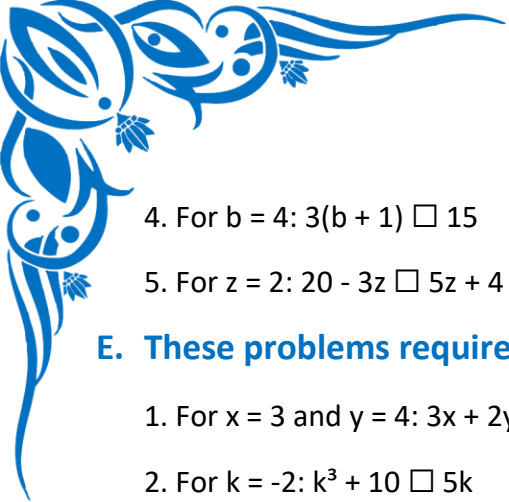
Column A	Column B
1. $(2x + 3, 4x - 1)$ for $x = 2$	A. $<$
2. $(10 - y, y + 4)$ for $y = 3$	B. $>$
3. $(5(a - 1), 4a + 1)$ for $a = 7$	C. $=$
4. $(z/3 + 1, z - 5)$ for $z = 9$	
5. $(2k, k^2)$ for $k = -3$	

C. These problems include negative numbers, decimals, and more complex expressions.

1. For $m = -3$: $4m + 10 \square m - 2$
2. For $p = 0.5$: $10p + 1 \square 6p + 3$
3. For $k = 8$: $(1/2)k + 5 \square k + 1$
4. For $y = -5$: $2(y - 3) \square 3y$
5. For $x = 4$: $x^2 + 1 \square 5x - 3$

D. Evaluate and compare the following expressions.

1. For $x = 5$: $x + 7 \square 2x$
2. For $y = 3$: $4y - 2 \square y + 8$
3. For $a = 10$: $a / 2 \square a - 5$



4. For $b = 4$: $3(b + 1) \square 15$

5. For $z = 2$: $20 - 3z \square 5z + 4$

E. These problems require multi-step evaluation or algebraic reasoning.

1. For $x = 3$ and $y = 4$: $3x + 2y \square 2x + 3y$

2. For $k = -2$: $k^3 + 10 \square 5k$

3. For what positive value of m are the two expressions equal? $4m + 2$ and $2m + 10$

4. Without substituting a value, compare the expressions for any value of $a > 0$: $a + 100 \square a + 99$ Explain your reasoning briefly.

5. For $p = 6$: $(1/2)(p + 8) \square (1/3)(2p + 9)$

F. Translate each scenario into two expressions and compare them.

1. Phone Plans: Plan A costs a flat fee of 20 plus 0.10 per minute (m). Plan B costs 15 plus 0.15 per minute (m). Which plan is cheaper for a call that lasts 80 minutes? Expression for Plan A: _____ Expression for Plan B: _____ Comparison for $m = 80$:

2. Car Rentals: Company A charges 40 per day plus 0.25 per mile (d). Company B charges \$60 per day with no mileage fee. Which company is cheaper for a 1-day trip of 50 miles? Expression for Company A: _____ Expression for Company B: _____ Comparison for $d = 50$:

3. Job Offers: Job A offers a 50 signing bonus plus 15 per hour (h). Job B offers \$18 per hour (h) with no bonus. Which job pays more for 20 hours of work in the first week? Expression for Job A: _____ Expression for Job B: _____ Comparison for $h = 20$:

4. Party Venues: Venue A charges a 150 rental fee plus 20 per guest (g). Venue B charges \$25 per guest (g) with no rental fee. Which venue is more expensive for a party with 40 guests? Expression for Venue A: _____ Expression for Venue B: _____ Comparison for $g = 40$:

5. Temperature Models: Model A predicts the temperature will be $T + 7$ degrees, where T is the current temperature. Model B predicts $2T - 3$ degrees. If the current temperature is $T = 12$ degrees, which model predicts a warmer temperature? Expression for Model A: _____ Expression for Model B: _____ Comparison for $T = 12$:

G. True or False

1. For $x = 3$, the expression $6x - 5$ is greater than $2x + 8$. _____

2. The expression $a + 10$ is always greater than the expression $2a$. _____

3. When $y = -4$, $3(y + 2)$ is equal to $2y$. _____

4. For $k = 10$, $(1/2)k + 5$ is less than k . _____

5. If $m = 1$, then $m^2 + 4$ is greater than $5m$. _____