Translating Words into Expressions

Name: _____	Date: _____	Score: _____ / 24

Quick Review

A **variable** is a letter that stands for an unknown number. An **algebraic expression** mixes numbers, variables, and operations — but no equals sign. To translate words, watch for key phrases: **sum** and **more than** mean add, **difference** and **less than** mean subtract, **product** and **times** mean multiply, and **quotient** means divide. Be careful with order: "5 less than n" is $n - 5$, not $5 - n$. Reading the phrase slowly and underlining the operation words makes the translation much easier.

◇ **Example:** Write an expression for "7 more than twice a number n."

⇒ Let's break the phrase into pieces. "Twice a number n" means we multiply n by 2, giving $2n$. Then "7 more than" that means we add 7 to it. So we get $2n + 7$. A quick check: if $n = 10$, twice that is 20, and 7 more is 27 — and $2(10) + 7 = 27$ matches perfectly.

Answer: $2n + 7$

PRACTICE

Write an algebraic expression for each phrase.

1. a number x plus 9 _____
2. a number y minus 4 _____
3. the sum of n and 12 _____
4. 6 times a number k _____
5. the product of 8 and m _____
6. a number p divided by 3 _____
7. 5 less than a number w _____
8. 10 more than a number t _____
9. twice a number b _____
10. the quotient of 24 and d _____
11. the difference of r and 7 _____
12. 3 times the sum of x and 2 _____
13. half of a number h _____
14. 4 more than the product of 5 and n _____
15. a number z increased by 15 _____
16. a number c decreased by 8 _____
17. the sum of $2n$ and 6 _____
18. 7 less than 3 times a number m _____
19. the quotient of a number v and 5 _____
20. 9 times the difference of x and 1 _____

Word Problems

21. Jake has n trading cards. His sister has 6 more than he does. Write an expression for how many cards his sister has. _____

22. A bag of apples costs \$$a$. Write an expression for the cost of 4 bags of apples. _____

23. A pizza is cut into equal slices and shared by p people. If there are 12 slices, write an expression for how many slices each person gets. _____

24. A taxi charges a \$$3$ flat fee plus \$$2$ for each mile m. Write an expression for the total cost of a ride. _____

Answer Keys

1. $x + 9$
2. $y - 4$
3. $n + 12$
4. $6k$
5. $8m$
6. $\frac{p}{3}$
7. $w - 5$
8. $t + 10$
9. $2b$
10. $\frac{24}{d}$
11. $r - 7$
12. $3(x + 2)$
13. $\frac{h}{2}$
14. $5n + 4$
15. $z + 15$
16. $c - 8$
17. $2n + 6$
18. $3m - 7$
19. $\frac{v}{5}$
20. $9(x - 1)$
21. $n + 6$
22. $4a$
23. $\frac{12}{p}$
24. $2m + 3$

Step-by-Step Explanations

1. "Plus" means add, so we write $x + 9$.
2. "Minus" means subtract: $y - 4$.
3. "Sum" means addition, so $n + 12$.
4. "Times" means multiply: $6 \times k$, written $6k$.
5. "Product" means multiply, so $8m$.
6. "Divided by" means division: $\frac{p}{3}$.
7. "5 less than w" starts with w and takes 5 away: $w - 5$.
8. "10 more than t" means add 10 to t: $t + 10$.
9. "Twice" means two times, so $2b$.
10. "Quotient" means divide: $24 \div d = \frac{24}{d}$.
11. "Difference" means subtract, in order: $r - 7$.
12. The sum $x + 2$ goes in parentheses, then multiply by 3: $3(x + 2)$.
13. "Half of" means divide by 2: $\frac{h}{2}$.
14. The product $5n$ first, then 4 more: $5n + 4$.
15. "Increased by" means add: $z + 15$.
16. "Decreased by" means subtract: $c - 8$.
17. Add $2n$ and 6 together: $2n + 6$.
18. The product $3m$ first, then take 7 away: $3m - 7$.
19. "Quotient of v and 5" means v divided by 5: $\frac{v}{5}$.
20. The difference $x - 1$ goes in parentheses, then times 9: $9(x - 1)$.
21. "6 more than" Jake's amount means add 6 to n, so his sister has $n + 6$ cards.
22. Four bags at \$$a$ each means 4 times a, written $4a$ dollars.
23. Sharing 12 slices equally among p people means divide: each person gets $\frac{12}{p}$ slices.
24. The miles cost $2m$ dollars, and the flat fee adds 3 more, so the total is $2m + 3$ dollars.

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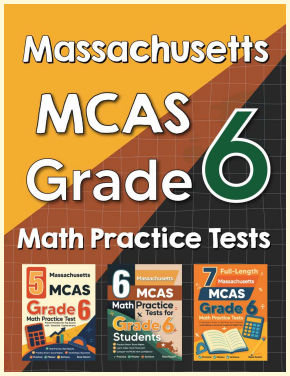

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