

Solutions for Rumack's Preparation Workbook: 3.2

1. To simplify the expression, add and subtract like terms. $2x + 5x - x = 2x + 5x - 1x = 7x - 1x = 6x$. The answer is (C).
2. To simplify, rearrange the expression by grouping like terms, and then add and subtract. Nothing can be simplified within the brackets because they do not contain like terms. The + or - sign just left of each term moves with it when rearranging an expression. $(7x - 3y) + (5y - 5x) = 7x - 3y + 5y - 5x = 7x - 5x - 3y + 5y = 2x + 2y$. The answer is (D) $2x + 2y$.
3. To solve the equation, isolate x . $4x - 3 = 21$, $4x - 3 + 3 = 21 + 3$, $4x = 24$, $\frac{4x}{4} = \frac{24}{4}$, $x = 6$. The answer is (D).
4. To solve for y , substitute the given value for x and simplify. $y = 4x + 3 = 4(3) + 3 = 12 + 3 = 15$. The answer is (A) 15.
5. To find the value of x , find the answer choice that results in the value of x^2 when multiplied by itself. $x^2 = 144$, $x \times x = 144$, $12 \times 12 = 144$, so $x = 12$. The answer is (D).
6. To find the value of x^4 , substitute the known value of x^2 . $x^4 = x \times x \times x \times x = (x \times x) \times (x \times x) = x^2 \times x^2 = 144 \times 144 = 20,736$. The answer is (A).
7. To find the value of y , substitute the known value of x^2 . $y^2 = 13^2 - x^2$, $y^2 = 169 - 144$, $y^2 = 25$, $y = 5$. The answer is (C).
8. To find the value of c , substitute the known values of a and b . $c^2 = a^2 + b^2$, $c^2 = 20^2 + 21^2$, $c^2 = 400 + 441$, $c^2 = 841$, $c \times c = 841$. To find out which answer choice squared results in 841, try multiplying an answer choice by itself. If it does not match, try another choice. $29 \times 29 = 841$. The answer is (C).
9. To find the value of M , substitute the known value of N and simplify. Then, make the answer look like an answer choice. $M = 8N - 2 = 8(12.25) - 2 = 98 - 2 = 96 = 8 \times 12$. The answer is (A).
10. To simplify the expression, expand by multiplying the term just outside the brackets by each term inside the brackets. $2(4x - 6) = 2(4x) - 2(6) = 8x - 12$. The answer is (A).
11. To simplify the expression, add and subtract like terms. $N + 2N + 3N - 5N = 1N + 2N + 3N - 5N = 6N - 5N = 1N = N$. The answer is (D).
12. To find information about M , work backwards. Given that N is 7 greater than zero, $N = 0 + 7 = 7$. Given that M is 5 greater than N , $M = N + 5 = 7 + 5 = 12$. Consider each answer choice. The answer is (D), since M is an even number.
13. To find an equivalent expression, try simplifying each answer choice to see if it matches the given expression. The answer is (D), since $2(M + N)$ simplifies to $2M + 2N$.
14. To find the value of N , substitute $M = 2$ into the equation $5N + 4M = 28$. $5N + 4(2) = 28$, $5N + 8 = 28$, $5N + 8 - 8 = 28 - 8$, $5N = 20$, $\frac{5N}{5} = \frac{20}{5}$, $N = 4$. The answer is (B).

15. To find the value of N , simplify the equation and isolate N . $2N + 5N = 28 + 56$, $7N = 84$, $\frac{7N}{7} = \frac{84}{7}$, $N = 12$. The answer is (C).

16. To find the value of M , isolate it in the equation. $3M - 6 = 78$, $3M - 6 + 6 = 78 + 6$, $3M = 84$, $\frac{3M}{3} = \frac{84}{3}$, $M = 28$. The answer is (B).

17. To find the new expression, substitute the given expression for Y into the original expression and simplify. $4X + Y = 4X + (7X) = 11X$. The answer is (D).

18. To find the value of C , set up an equation and solve by substituting known values and isolating C . $A + B + C = 180^\circ$, $44^\circ + 73^\circ + C = 180^\circ$, $117^\circ + C = 180^\circ$, $117^\circ - 117^\circ + C = 180^\circ - 117^\circ$, $C = 63^\circ$.

19. To solve, isolate the variable. $3X + 61 = 247$, $3X + 61 - 61 = 247 - 61$, $3X = 186$, $\frac{3X}{3} = \frac{186}{3}$, $X = 62$. The answer is (C).

20. To find the product, find the value of each variable separately and then multiply them together. Find the value of M : $4M + 1 = 17$, $4M + 1 - 1 = 17 - 1$, $4M = 16$, $\frac{4M}{4} = \frac{16}{4}$, $M = 4$. Find the value of N : $7N - 1 = 41$, $7N - 1 + 1 = 41 + 1$, $7N = 42$, $\frac{7N}{7} = \frac{42}{7}$, $N = 6$. The product of M and N is $M \times N = 4 \times 6 = 24$. The answer is (C).

21. To simplify the expression, expand by multiplying the terms just outside brackets by each term inside their adjacent brackets. Then group like terms and simplify. $2(M - 11) + 3(N + 12) = 2(M) - 2(11) + 3(N) + 3(12) = 2M - 22 + 3N + 36 = 2M + 3N - 22 + 36 = 2M + 3N + 14$. The answer is (B).

22. To solve, substitute the given value into the expression and simplify. $3Z + 7 = 3(3) + 7 = 9 + 7 = 16$. The answer is (C).

23. To solve, isolate the variable. $3K + 4 = K + 80$, $3K + 4 - 4 = K + 80 - 4$, $3K = K + 76$, $3K - K = K - K + 76$, $2K = 76$, $\frac{2K}{2} = \frac{76}{2}$, $K = 38$. The answer is (B).

24. To find the value of M , isolate it. $2 \div M = 10$, $2 \div M \times M = 10 \times M$, $2 = 10M$, $\frac{2}{10} = \frac{10M}{10}$, $0.2 = M$. The answer is (D).

25. To find the value of X , isolate it. $37 - X = 36 \div 2$, $37 - X = 18$, $37 - 37 - X = 18 - 37$, $-X = -19$, $\frac{-1X}{-1} = \frac{-19}{-1}$, $X = 19$. The answer is (A).