

Solutions for Rumack's Preparation Workbook: 3.1

1. To complete the calculations for a question with only one type of opposite operations (in this case addition and subtraction), do one calculation at a time from left to right. $4 + 6 - 7 = 10 - 7 = 3$. The answer is (D).
2. To complete the calculations, do multiplication and division before subtraction. $8 \times 9 - 20 \div 2 = 72 - 20 \div 2 = 72 - 10 = 62$. The answer is (A).
3. To complete the calculations for a question with only one type of opposite operations (in this case multiplication and division), do one calculation at a time from left to right. $5 \times 4 \times 3 \times 2 \div 10 = 20 \times 3 \times 2 \div 10 = 60 \times 2 \div 10 = 120 \div 10 = 12$. The answer is (D).
4. To complete the calculations for a question with brackets, do the calculations inside the brackets first. $(1 + 2 + 3 + 5) \times 5 = (3 + 3 + 5) \times 5 = (6 + 5) \times 5 = 11 \times 5 = 55$. The answer is (B).
5. To complete the calculations, do multiplication and division before subtraction. $8 \times 8 - 2 \div 2 = 64 - 2 \div 2 = 64 - 1 = 63$. The answer is (A).
6. To complete the calculations for a question with brackets, do the calculations inside the brackets first. $(6^2)^2 = (6 \times 6)^2 = (36)^2 = 36 \times 36 = 1,296$. The answer is (A).
7. To complete the calculations for a question with brackets, do the calculations inside the brackets first. $(12 - 5 + 3)^2 = (7 + 3)^2 = (10)^2 = 100$. The answer is (B).
8. To complete the calculations, expand the terms with exponents. Then, do multiplication before subtraction. $4^2 - 2^4 = 4 \times 4 - 2 \times 2 \times 2 \times 2 = 16 - 2 \times 2 \times 2 \times 2 = 16 - 16 = 0$. The answer is (D).
9. To complete the calculations, do the calculations inside the brackets first. Within the brackets, expand the terms with exponents and multiply before subtracting. $(4^3 - 3^2) \div 5 = (4 \times 4 \times 4 - 3 \times 3) \div 5 = (16 \times 4 - 3 \times 3) \div 5 = (64 - 9) \div 5 = 55 \div 5 = 11$. The answer is (A).
10. To find the solution, determine the operation or change represented by the symbol and apply it to the question. The examples demonstrate that each arrow results in the decimal moving one place to the left. The answer is (D), since the decimal moves 4 spaces left in dividing 6340.1 by 10^4 to get 0.63401.
11. To complete the calculations, work with brackets first, followed by multiplication and addition. $4 + 6 * \left(\frac{10}{5}\right) = 4 + 6 * 2 = 4 + 12 = 16$. The answer is (E).
12. To complete the calculations, work inside brackets first, followed by multiplication and then subtraction. $2(5 + 3) - 2 = 2(8) - 2 = 16 - 2 = 14$. The answer is (B).
13. To complete the calculations, expand the terms with exponents. Then, multiply before adding and subtracting. $5 + 4 - 3^2 = 5 + 4 - 3 \times 3 = 5 + 4 - 9 = 9 - 9 = 0$. The answer is (D).
14. To complete the calculations, do all multiplication first from left to right, and then do subtraction and addition. $5 \times 2 - 4 \times 2 + 3 \times 2 = 10 - 4 \times 2 + 3 \times 2 = 10 - 8 + 6 = 2 + 6 = 8$. The answer is (C).

15. To complete the calculations, work inside the brackets first by expanding any exponents and then multiplying. Then, expand exponents outside the brackets and do all multiplication. Finally, do addition and subtraction. $2^2 + 3 * 6 - (3^2 * 1) = 2^2 + 3 * 6 - (3 \times 3 * 1) = 2^2 + 3 * 6 - (9 * 1) = 2 \times 2 + 3 * 6 - 9 = 4 + 3 * 6 - 9 = 22 - 9 = 13$. The answer is (A).

16. To complete the calculations, expand the term with an exponent first and then multiply before subtracting. $4^2 - 6 \times 2 = 4 \times 4 - 6 \times 2 = 16 - 6 \times 2 = 16 - 12 = 4$. The answer is (C).

17. To complete the calculations, expand terms with exponents first. Then, multiply from left to right. Finally, add from left to right. $3 \times 10^0 + 2 \times 10^1 + 1 \times 10^2 = 3 \times 1 + 2 \times 10 \times 10 = 3 + 2 \times 10 + 1 \times 10 \times 10 = 3 + 20 + 100 = 123$. The answer is (D).

18. To complete the calculations, work with terms with exponents individually, and then do addition. $1^0 + 2^0 + 3^0 + 4^0 = 1 + 1 + 1 + 1 = 4$. The answer is (D).

19. To complete the calculations, do the calculations inside the brackets first. $6 + (5 - 4 + 3) - 2 = 6 + (1 + 3) - 2 = 6 + 4 - 2 = 10 - 2 = 8$. The answer is (A).

20. To complete the calculations, do the calculations inside the brackets first. Next, expand terms with exponents. Finally, do multiplication before subtraction. $35 - (8 - 3)^2 = 35 - (5)^2 = 35 - 5 \times 5 = 35 - 25 = 10$. The answer is (D).

21. To complete the calculations, do the calculations inside the brackets first. Then, divide before adding. $150 \div (5 + 10) + 10 = 150 \div 15 + 10 = 10 + 10 = 20$. The answer is (B).

22. To complete the calculations for a question with only one type of opposite operations, in this case addition and subtraction, do one calculation at a time from left to right. $144 - 82 + 42 - 22 = 62 + 42 - 22 = 104 - 22 = 82$. The answer is (E).

23. To complete the calculations, do division first, followed by addition and subtraction from left to right. $24 - 8 \div 4 + 12 - 4 \div 2 = 24 - 2 + 12 - 4 \div 2 = 24 - 2 + 12 - 2 = 22 + 12 - 2 = 34 - 2 = 32$. The answer is (A).

24. To find the solution, determine the operation or change represented by the symbol and apply it to the question. Try each example with different operations. When @ is replaced by the addition symbol, the resulting statements have the same answer. $4@3@6 = 4 + 3 + 6 = 13$. $8@3^2@(-3) = 8 + 3^2 + (-3) = 14$. Therefore $(-5)@10@3^2 = (-5) + 10 + 3^2 = (-5) + 10 + 3 \times 3 = (-5) + 10 + 9 = 5 + 9 = 14$. The answer is (D).

25. To complete the calculations, do the calculations inside the innermost brackets first, then the outer brackets, and finally outside the brackets. In each step, multiplication or division should be done before addition or subtraction. $(16 - 2(8 - 4 \div 2)) - 1 = (16 - 2(8 - 2)) - 1 = (16 - 2(6)) - 1 = (16 - 12) - 1 = 4 - 1 = 3$. The answer is (D).