

Introduction

This booklet revises the essential GCSE Maths skills required for success in **Core Maths**. You are expected to apply mathematics to real-life contexts, interpret information, and justify your answers.

Instructions:

- Show all working.
 - Use a calculator only when appropriate.
 - Attempt every question.
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Place Value and Rounding (15 Questions)

1. Write 6,405,218 in words.
2. What is the value of the digit 5 in 3.572?
3. Round 48.736 to 1 decimal place.
4. Round 48.736 to 2 decimal places.
5. Round 0.006381 to 2 significant figures.
6. Round 92,641 to the nearest 1,000.
7. Write 0.00047 in standard form.
8. Write 3.2×10^5 as an ordinary number.
9. Which is larger: 0.402 or 0.42?
10. Round £19.995 to the nearest penny.
11. Round 7,849 to 1 significant figure.
12. Write 4 million as a number.
13. What is the place value of the 3 in 0.038?
14. Estimate the population of a town as 68,492 to 1 significant figure.
15. Explain why rounding is useful.

Four Operations (15 Questions)

1. $4,875 + 3,496$
2. $9,204 - 5,678$
3. 47×36
4. $864 \div 24$
5. $3,906 + 2,785$
6. $8,000 - 3,469$
7. 125×48
8. $1,512 \div 18$
9. $\pounds 3.85 \times 12$
10. $\pounds 96 \div 8$
11. $7,204 + 6,889$
12. $10,000 - 4,376$
13. 39×27
14. $2,268 \div 12$
15. A shop sells 18 items at $\pounds 4.75$ each. Find the total cost.

Order of Operations (15 Questions)

1. $6 + 3 \times 8$
2. $(6 + 3) \times 8$
3. $20 - 4^2$
4. $36 \div 6 \times 3$
5. $5 + 18 \div 3$
6. $(5 + 18) \div 3$
7. $4^2 + 6 \times 5$
8. $50 - 30 \div 5$
9. $8 + 12 \div 4 \times 3$
10. $(8 + 12) \div 4 \times 3$
11. $7 \times (10 - 4)$
12. $100 \div (5^2)$
13. $2^3 + 6 \times 4$
14. Explain why brackets change answers.
15. Create your own BIDMAS question.

Negative Numbers (15 Questions)

1. $-8 + 12$
2. $5 - 14$
3. -6×7
4. $-36 \div 6$
5. $-4 - 9$
6. $-15 + 7$
7. -9×-8
8. $48 \div -6$
9. $-20 - (-5)$
10. -3×12
11. $-50 \div -10$
12. $-7 + (-13)$
13. The temperature is -4°C and drops by 9°C . Find the new temperature.
14. A bank balance is $-\text{£}35$ and $\text{£}62$ is added. Find the new balance.
15. Explain where negative numbers are used in real life.

Fractions (15 Questions)

1. Simplify $12/20$
2. Simplify $18/24$
3. Write $3/8$ as a decimal.
4. Write 0.6 as a fraction.
5. Find $3/5$ of 40 .
6. Find $7/10$ of 90 .
7. Which is larger: $4/7$ or $5/9$?
8. Write $1\frac{3}{4}$ as an improper fraction.
9. Write $11/4$ as a mixed number.
10. Find $2/3$ of 27 .
11. Write 0.125 as a fraction.
12. Simplify $45/60$.
13. Find $5/6$ of 48 .
14. Write $9/20$ as a decimal.
15. Explain why fractions are useful.

Adding & Subtracting Fractions (15 Questions)

1. $\frac{1}{3} + \frac{1}{3}$
2. $\frac{5}{6} - \frac{1}{6}$
3. $\frac{3}{4} + \frac{1}{8}$
4. $\frac{7}{10} - \frac{3}{5}$
5. $\frac{2}{3} + \frac{5}{9}$
6. $\frac{11}{12} - \frac{5}{12}$
7. $\frac{4}{5} + \frac{7}{10}$
8. $\frac{9}{8} - \frac{3}{4}$
9. $1\frac{1}{2} + 2\frac{1}{4}$
10. $3\frac{3}{4} - 1\frac{1}{2}$
11. $\frac{5}{6} + \frac{7}{12}$
12. $\frac{10}{9} - \frac{4}{9}$
13. A recipe needs $\frac{5}{6}$ L of milk. You have $\frac{1}{3}$ L. How much more is needed?
14. Find the total of $\frac{3}{10}$ and $\frac{9}{20}$.
15. Explain how to add fractions with different denominators.

Multiplying & Dividing Fractions (15 Questions)

1. $\frac{2}{3} \times \frac{4}{5}$
2. $\frac{7}{8} \times 16$
3. $\frac{5}{6} \div \frac{2}{3}$
4. $\frac{9}{10} \times \frac{3}{4}$
5. $4 \div \frac{2}{5}$
6. $1\frac{1}{2} \times 8$
7. $\frac{6}{7} \div 3$
8. $10 \times \frac{3}{5}$
9. $\frac{7}{9} \times \frac{6}{11}$
10. $\frac{5}{12} \div \frac{5}{6}$
11. $2\frac{1}{4} \times 4$
12. $8 \div \frac{1}{4}$
13. A 3 km walk is $\frac{3}{4}$ of a route. Find the full distance.
14. Find $\frac{2}{5}$ of 60.
15. Explain how dividing by a fraction works.

Decimals (15 Questions)

1. $4.7 + 2.85$
2. $6.02 - 3.486$
3. 3.6×0.4
4. $7.5 \div 0.5$
5. 0.48×0.6
6. $9.2 - 5.78$
7. 1.25×0.8
8. $4.5 \div 0.3$
9. $\pounds 2.35 \times 7$
10. $\pounds 18.60 \div 4$
11. 0.09×0.7
12. $6.3 + 4.087$
13. $12.5 \div 0.25$
14. 0.004×900
15. Explain why decimals are useful for money.

Percentages (15 Questions)

1. Find 10% of $\pounds 60$.
2. Find 25% of 80.
3. Find 15% of $\pounds 200$.
4. Increase 300 by 10%.
5. Decrease $\pounds 500$ by 20%.
6. Find 5% of 360.
7. Find 12% of $\pounds 150$.
8. Increase $\pounds 40$ by 25%.
9. Decrease 90 by 15%.
10. A price rises from $\pounds 50$ to $\pounds 60$. Find the percentage increase.
11. A value falls from 200 to 150. Find the percentage decrease.
12. Write 0.35 as a percentage.
13. Write 7% as a decimal.
14. Find 1% of $\pounds 450$.
15. Explain why percentages are useful.

Ratio (15 Questions)

1. Simplify 6 : 18
2. Simplify 15 : 20
3. Share £60 in the ratio 1 : 2
4. Share £90 in the ratio 2 : 3
5. Write 3 : 5 as a fraction.
6. Write 4 : 1 as a fraction.
7. The ratio of boys to girls is 3 : 5. If there are 24 boys, how many girls?
8. A recipe uses flour and sugar in the ratio 2 : 3. If flour is 200 g, find the sugar.
9. Simplify 24 : 36 : 12
10. Divide £120 in the ratio 3 : 2 : 1
11. Write 7 : 10 as a fraction.
12. Write 5 : 4 as a fraction.
13. Explain what a ratio compares.
14. Give a real-life example of ratio.
15. Explain the difference between ratio and fraction.

Powers & Roots (15 Questions)

1. 2^5
2. 3^4
3. 5^3
4. $\sqrt{49}$
5. $\sqrt{121}$
6. $\sqrt{144}$
7. Write 1,000 as a power of 10.
8. Write 0.01 as a power of 10.
9. $10^3 \div 10^2$
10. $2^3 \times 2^4$
11. 9^2
12. $\sqrt{225}$
13. Write 100,000 in standard form.
14. Write 6×10^{-2} as a decimal.
15. Explain what a square root is.

Algebra Basics (15 Questions)

1. Simplify $3x + 5x$
2. Simplify $9a - 4a$
3. Simplify $6y + 2y - y$
4. Evaluate $5x$ when $x = 4$
5. Evaluate $2a + 7$ when $a = 6$
6. Write an expression for "3 more than twice a number".
7. Write an expression for "half a number plus 4".
8. Simplify $4p + 7 - 2p$
9. Simplify $6(x + 3)$
10. Expand $5(y - 2)$
11. Write an expression for the perimeter of a square with side x .
12. Evaluate $3m - 5$ when $m = 8$
13. Simplify $10k \div 2$
14. Explain what a variable is.
15. Give an example of algebra used in real life.

Solving Equations (15 Questions)

1. $x + 5 = 14$
2. $x - 7 = 3$
3. $3x = 18$
4. $5x = 45$
5. $x/4 = 6$
6. $x/5 = 7$
7. $2x + 4 = 12$
8. $3x - 6 = 15$
9. $4x + 5 = 21$
10. $7x - 14 = 0$
11. $x/3 + 2 = 6$
12. $5x + 10 = 35$
13. A number multiplied by 6 gives 54. Find the number.
14. Solve $2(x + 3) = 14$
15. Explain how to check a solution.

Substitution (15 Questions)

1. Find $x + y$ when $x = 5$, $y = 7$
2. Find $2a$ when $a = 9$
3. Find $3m + 4$ when $m = 6$
4. Find p^2 when $p = 8$
5. Find ab when $a = 4$, $b = 5$
6. Find $5x - 2$ when $x = 3$
7. Find $2(y + 4)$ when $y = 6$
8. Find $10 - k$ when $k = 7$
9. Find $n^2 - 1$ when $n = 5$
10. Find $6t \div 3$ when $t = 9$
11. Find $4r + s$ when $r = 2$, $s = 5$
12. Find $x/2$ when $x = 18$
13. Find $7p$ when $p = 4$
14. Find $3a - 2b$ when $a = 6$, $b = 4$
15. Explain why substitution is useful.

Coordinates & Graphs (15 Questions)

1. Write the coordinates of the origin.
2. Write the coordinates of $(4, -3)$.
3. Which quadrant is $(-2, 5)$ in?
4. Which quadrant is $(3, -7)$ in?
5. Plot $(1, 2)$
6. Plot $(2, 4)$
7. Plot $(3, 6)$
8. What do you notice about the points above?
9. Write the coordinates of a point on the x-axis.
10. Write the coordinates of a point on the y-axis.
11. Explain what the x-coordinate represents.
12. Explain what the y-coordinate represents.
13. Where are coordinates used in real life?
14. Draw a set of axes.
15. Explain what a graph shows.

Averages (15 Questions)

1. Find the mean of 4, 6, 10, 12
2. Find the median of 3, 7, 8, 12, 15
3. Find the mode of 2, 4, 4, 6, 9
4. Find the range of 5, 11, 18, 20
5. Which average is affected by outliers?
6. Find the mean of 2, 3, 5, 10
7. Find the median of 1, 3, 3, 7, 9
8. Find the mode of 6, 6, 6, 9, 12
9. Find the range of 4, 9, 14, 22
10. Give an example of misleading mean.
11. When is the median useful?
12. Which average would you use for house prices?
13. Find the mean of 5 numbers that total 60.
14. Explain what range tells you.
15. Explain why averages are useful.

Estimation & Data (15 Questions)

1. Estimate 49×21
2. Estimate $602 \div 11$
3. Round 7,492 to 1 significant figure.
4. Round 0.087 to 1 significant figure.
5. Estimate $\text{£}19.99 \times 8$
6. Why is estimation useful?
7. What is primary data?
8. What is secondary data?
9. Name two types of graph.
10. What is a pie chart used for?
11. What is a bar chart used for?
12. Why are graphs useful?
13. Write one question a graph could answer.
14. Explain how to check an answer.
15. Give an example of data in real life.