Acumen Teach
To the point

Number Master-box

Number Basics—Algebra—Logic—Statistics

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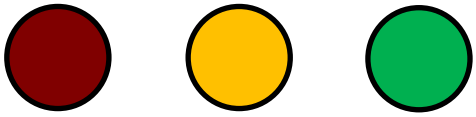
To the point

2 hours

38 Questions

Easy (12 Questions)	/21
Moderate(12 Questions)	/25
Difficult(12 Questions)	/31
Total Marks	**/77**

How did you do?



Easy Questions

1. **Simplify the following expression:** 7×8+15−9

$(7 \times 8) + 15 - 9$ BIDMAS

$56 + 6$ (1)

62 (1)

(2 marks)

2. **Solve for *x*:** 5x−12=23

$5x - 12 = 23$

$5x = 35$ (1)

[+12] $5x = 23 + 12$ (1) (÷5) $x = 7$ (1)

(3 marks)

3. **Evaluate:** 3(4+5)−6

$3(4+5) - 6$ BIDMAS

$3 \times (9) - 6$ (1)

(2 marks)

$\therefore \begin{bmatrix} 27-6 \\ 21 \end{bmatrix}$ (1)

4. **Calculate:** −8+15

$-8+15 = 15-8 = 7$ (1)

(1 marks)

5. **What is the result of** −4*-5

$-4 \times -5 = -(4 \times 5) = -20$ (1)

(1 marks)

6. **Simplify:** (-3)^2 - 7

$-3^2 - 7 = 9-7$ (1) $= 2$ (1)

(2 marks)

7. **If you buy 3 pens at £1.20 each and 2 notebooks at £2.50 each, what is the total cost?**

$3 \times 1.20 = £3.60$

$2 \times 2.50 = £5.00$ } (1)

$3.60 + 5.00 = £8.60$ (1)

(2 marks)

8. **You have £50. You spend £15.75 on a book and £22.30 on groceries. How much do you have left?**

£60 - £15.75 - £22.30 (1) = £11.95 (1)

(2 marks)

9. **A shirt is priced at £25. If there is a 20% discount, how much will the shirt cost?**

∴ £25 × 0.8 = £20 (1)

£20 (1. = × 0.8) (1)

(2 marks)

10. **What is the value of 4^3**

$4^3 = 4 \times 4 \times 4 = 64$ (1)

(1 marks)

11. **Find the HCF (Highest Common Factor) of 24 and 36.**

12 (1)

36 = 1, 2, 3, 4, 6, 9, 12, 18, 36 } (1)
24 = 1, 2, 3, 4, 6, 8, 12, 24

(2 marks)

12. **Express** 0.75 **as a fraction in its simplest form.**

3/4 (1)

(1 marks)

Moderate Questions

13. **Solve for *x*:** 3(*x*−5)=2*x*+6

$3(x-5)=2x+6$

$3x-15=2x+6$ (1) (expand brackets)

$3x=2x+21$ (+15) (1)

$x=21$ (−2x) (1)

(3 marks)

14. **Simplify:** 2×3^2−(4+5)

$2\times3^2-(4+6)$

$18-9=9$ (1)

$2\times9-9$ (1)

mark

(2 marks)

15. **Calculate:** −24/6

$-24\div6=4$

(1 marks)

16. **Simplify:** (−18+6×3)/3

$\frac{(-18+6\times3)}{3}$ → $\frac{-18+18}{3}$ (1) → $\frac{0}{3}=0$ (1)

(2 marks)

17. **You have £100. You spend £30.25 on shoes and £45.50 on a jacket. How much do you have left?**

£100 − £30.25 − £45.50 (1) = £24.25 (1)

(2 marks)

18. **Find the total cost if you buy 4 apples at £0.80 each and 3 oranges at £1.20 each.**

4 × 0.80 = 3.20
3 × 1.20 = 3.60 } (1)

3.20 + 3.60 = 6.80

(2 marks)

19. **Evaluate:** (−4)^2+(−3)^3

$-4^2 + -3^3$

$16 + -3^3$ (1)

(3 marks)

20. **Find the LCM of 15 and 20.**

15 / 20 → 3 (1) We can do 15 × 4 (bottom) or 4 · 20 × 3 (top) (both) = 60 (1)

(2 marks)

21. **Simplify:** (2*x*^2−3*x*+4)−(*x*^2+*x*−2)

$2n^2 + 3n + 4 - n^2 + n - 2$

$3n^2 + 3n + 4 + n - 2$ (1)

$3n^2 + 4n + 4 - 2$ (1)

$3n^2 + 4n + 2$ (1)

(3 marks)

22. **Solve:** 2/5=x/10

$\frac{2}{5} = \frac{x}{10}$

$5 \times y = 10$
$2 \times y = x$ } (1).

$5 \times 2 = 10$

$2 \times 2 = 4$ (1)

(2 marks)

23. **Convert 3.5 kg to grams.**

1kg = 1000grams $3.5 \times 1000 = 3500g$

(1 marks)

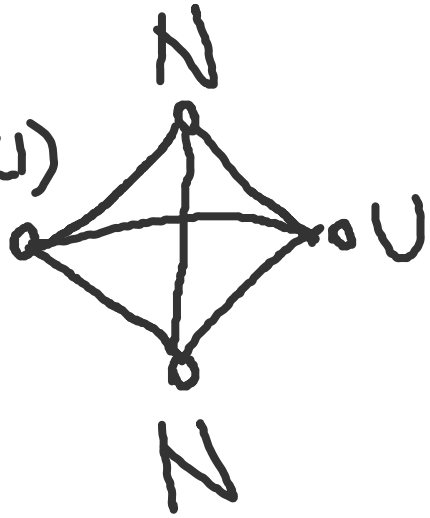
24. **How many ways can you arrange the letters in the word "*NOUN*"?**

N

O U (1)

N

Ans = $4 \times 3 \times 2 \times 1 = 24$ (1)



(2 marks)

Difficult Questions

25. **Solve for *x*:** $2x^2-3x-2=0$

$2x^2-3x-2=0$

$\frac{-b\pm\sqrt{b^2-4ac}}{2a} \rightarrow x=2;-\frac{1}{2}(4)$

(4 marks)

26. **Evaluate:** $3\times(2^3-4)/5-3$

$3(2^3-4)/5-3$ $\quad \frac{3(8-4)}{2}(1)=\frac{3(4)}{2}(1)=\frac{12}{2}=6(1)$

(3 marks)

27. **Simplify:** $(-6)^2-4\times(-3)/5-(-1)$ (Apologies)

$\frac{-6^2-4\times3}{5-(-1)}=\frac{36-(-12)}{6}(1)=\frac{48}{6}(1)=8(1)$

(3 marks)

28. **Solve:** $2(x+4)-3(x-2)=5$

$2(x+4)-3(x-2)=5$

$2x+8-3x+6=5$ (1)

$-x+8+6=5$

$14-x=5$, $x=9$

(3 marks)

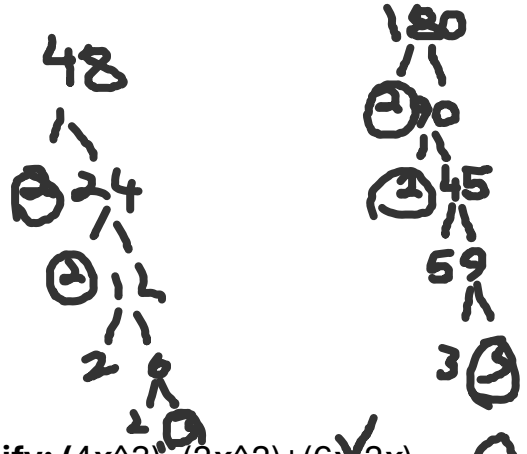
29. **Calculate the total cost if you buy 5 books at £4.25 each, with a discount of 15%.**

$5 \times £4.25 = £21.25$ (1)

$£21.25 \times 0.85$ $£18.0625$

(3 marks)

30. **Find the HCF of 48 and 180.**



$2 \times 2 \times 3 = 12$

(2 marks)

31. **Simplify:** $(4x^3)-(2x^2)+(6x)/2x)$ Apologies

$$\frac{4x^3 - 2x^2 + 6x}{2x} = 2x^2 - x + 3$$ (3 marks)

(3 marks)

32. **Solve:** sqrt{3*x* + 4} = 7

$\sqrt{3x+4} = 7$ $x = 15$ (1)

$3x + 4 = 49$ (1)

$3x = 45$ (1)

(3 marks)

33. **Convert 7.25% to a fraction in its simplest form.**

25% = 1/4. (1)

7 1/4 (1)

(2 marks)

34. **A box contains 6 red balls, 4 blue balls, and 5 green balls. What is the probability of drawing a red or a blue ball?**

$\frac{6+4}{6+4+5}$ (1) $= \frac{10}{15}$ (1) $= \frac{2}{3}$ (1)

(3 marks)

35. **How many ways can you arrange the letters in the word "ALGEBRA"? (considering repeated letters)**

We can do $\frac{7!}{2!}$ (1) $= 2520$ (1)

(3 marks)

36. **Find the cube root of 512**

$\sqrt[3]{512} = 8$ (2)

(2 marks)