GCSE Foundation Maths: Topic Test 1 Number Essentials - Mark Scheme

Mark Mark	Description
M1	Method mark (awarded for showing correct process)
A1	Accuracy mark (awarded for correct answer dependent on M mark)
B1	Independent mark (awarded for correct answer/statement regardless of method)

Mark Scheme & Worked Solutions

Section 1: Fractions

- **Work out 3/5 + 1/4**
  • Find a common denominator for 5 and 4 (LCD = 20):
  3/5 = 12/20
  1/4 = 5/20
  • Add the numerators: 12/20 + 5/20 = 17/20
  Answer: 17/20 [M1 for common denominator 20, A1 for 17/20]

- **Work out 2 ⅓ x 4/7**
  • Convert mixed number to improper fraction: 2 ⅓ = 7/3
  • Multiply numerators and denominators: (7/3) x (4/7) = 28/21
  • Simplify by dividing numerator and denominator by 7: 4/3 or 1 ⅓
  Answer: 4/3 or 1 ⅓ [M1 for converting to 7/3, M1 for multiplying, A1 for 4/3 or 1 ⅓]

- **Work out 5/6 ÷ 2/3**
  • Multiply by the reciprocal of the second fraction: 5/6 x 3/2 = 15/12
  • Simplify: 15/12 = 5/4 = 1 ¼
  Answer: 1 ¼ [M1 for multiplying by reciprocal 3/2, A1 for 1 ¼]

- **School bus/cycle/walk pupils problem**
  • Fraction that travel by bus or cycle: ⅜ + ¼ = ⅜ + 2/8 = ⅝
  • Fraction that walk: 1 - ⅝ = ⅜
  • Number of pupils walking: ⅜ of 480 = (480 ÷ 8) x 3 = 60 x 3 = 180 pupils

Answer: 180 pupils [M1 for finding fraction or calculating individual nu
(180 bus, 120 cycle), A1 for 180]

Section 2: Percentages

- **Work out 35% of £180**
  • 10% of 180 = £18
  • 30% = 3 x 18 = £54
  • 5% = half of 10% = £9
  • 35% = 54 + 9 = £63
  Answer: £63 [M1 for finding 10% (£18) or using multiplier 0.35, A1 for £63]

- **Coat sale price (20% reduction on £75)**
  • 10% of 75 = £7.50
  • 20% = 2 x 7.50 = £15 discount
  • Sale price = 75 - 15 = £60 (or 75 x 0.80 = 60)
  Answer: £60 [M1 for calculating £15 discount or using multiplier 0.8, A1 for £60]

- **Percentage profit (Vase bought for £140, sold for £182)**
  • Profit = 182 - 140 = £42
  • Percentage profit = (Profit / Original Price) x 100 = (42 / 140) x 100
  • 42 / 140 = 3 / 10 = 0.30 = 30%
  Answer: 30% [M1 for calculating profit £42, M1 for 42/140 x 100, A1 for 30%]

- **Compound interest (£1,500 at 3% for 2 years)**
  • Year 1: 1500 x 1.03 = £1,545
  • Year 2: 1545 x 1.03 = £1,591.35 (or 1500×1.03^2 = £1,591.35)
  Answer: £1,591.35 [M1 for 1500×1.03^2, A1 for £1,591.35]

Section 3: Standard Form

- **Complete each part below:**
  - 45,000 in standard form: **4.5×10^4** [B1]
  - 0.00062 in standard form: **6.2×10^{-4}** [B1]
  - 7.05×10^4 as an ordinary number: **70,500** [B1]

- **Work out $(2.4 \times 10^5) \times (3 \times 10^3)$**
  • Multiply numbers: 2.4 x 3 = 7.2
  • Multiply powers of 10: $10^5 \times 10^3 = 10^8$

Answer: 7.2 x 10^8 [M1 for 7.2 or 10^8, A1 for 7.2 x 10^8]

- **Work out (8 x 10^7) ÷ (2.5 x 10^3)**
  • Divide numbers: 8 ÷ 2.5 = 3.2
  • Divide powers of 10: $10^7 \div 10^3 = 10^4$
  Answer: 3.2 x 10^4 [M1 for 3.2 or 10^4, A1 for 3.2 x 10^4]

Section 4: Ratio Sharing

- **Share £450 in the ratio 2 : 3 : 4**
  • Total parts = 2 + 3 + 4 = 9 parts
  • Value of 1 part = £450 ÷ 9 = £50
  • Shares: 2 x 50 = £100, 3 x 50 = £150, 4 x 50 = £200
  Answer: £100 : £150 : £200 [M1 for dividing £450 by 9 (£50), A1 for £100 : £150 : £200]

- **Ratio of adults to children is 3 : 7 (56 children)**
  • 7 parts = 56 children
  • 1 part = 56 ÷ 7 = 8
  • Adults = 3 parts = 3 x 8 = 24 adults
  Answer: 24 adults [M1 for 56 ÷ 7 (= 8), A1 for 24]

- **Sophie and Daniel ratio 4 : 9 (Daniel gets £65 more)**
  • Difference in parts = 9 - 4 = 5 parts
  • 5 parts = £65
  • 1 part = £65 ÷ 5 = £13
  • Total parts = 4 + 9 = 13 parts
  • Total money = 13 x 13 = £169
  Answer: £169 [M1 for 9 - 4 = 5 parts, M1 for £65 ÷ 5 = £13, A1 for £169]

- **Combining ratios: Red : Blue = 2 : 5, Blue : Green = 3 : 4**
  • Equalise Blue (LCM of 5 and 3 is 15):
  Red : Blue = (2 x 3) : (5 x 3) = 6 : 15
  Blue : Green = (3 x 5) : (4 x 5) = 15 : 20
  • Red : Blue : Green = 6 : 15 : 20
  • Red : Green = 6 : 20 = 3 : 10

Answer: 3 : 10 [M1 for equalising blue parts to 15 (or equivalent method), A1 for 3 : 10]

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Sections	Total Marks
1. Fractions	9
2. Percentages	9
3. Standard Form	8
4. Ratio Sharing	9
TOTAL MARKS	35