



## GCSE Foundation 03

*Number*

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154 minutes



147 marks

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*Fractions*

- M1.** (a)  $120 - 97$  or  $89 - 70 + 31 - 27$   
 oe or 19 or 4 seen

**M1**

23

SC1 answer 46

**A1**

- (b) 15

for Wednesday

**B1**

24

for Thursday

**B1**

- (c)  $\frac{30}{120}$  seen

oe fraction, decimal, percentage

**M1**

$\frac{1}{4}$

SC1  $\frac{15}{43}$

SC1 any seen fraction correctly cancelled to simplest form

**A1**

- (d)  $\frac{50}{150}$  or attempts to make a comparison

Seen or implied

**M1**

$\frac{1}{3}$  or  $\left(\frac{1}{4} = \right) \frac{50}{200}$  or both values correct in appropriate comparison

Fraction/decimal/percentage

**A1**

Their yes with fractions with either same numerator (oe)  
 or same denominator  
 or with both values as decimals or both values as percentages  
 or appropriate diagrams

Strand (iii)

Supporting answers with explanations and evidence

ft their  $\frac{1}{4}$  from 3c and their  $\frac{1}{3}$

**Q1**

**Alternative method**

$$\frac{150}{4}$$

*May be implied by diagram*

**M1**

37.5

**A1**

Yes ( $50 > 37.5$ )

**Q1**

**[9]**

**M2.** eg  $4 \times \frac{1}{4}(l) = 1(l)$

oe  $20 \div 4$  or 5 or  $\frac{1}{5}$

**M1**

$4 \times 4$  or 16

oe their  $5 \times \frac{1}{4}$

**M1**

No and 16

oe eg No and  $1\frac{1}{4}$

**A1**

**[3]**

**M3.** (a) 2005

*Condone 05 but not 205*

**B1**

(b) 2009

*Condone 09 but not 209*

**B1**

(c) 110 (billion) **chosen**

*Ignore any attempt to use zeros for billion i.e. accept digits 110*

**B1**

$$\frac{9}{20} \times \text{their 110 (billion)}$$

oe eg their  $110 \times 0.45$  or  $5.5 \times 9$  or their  $110 \div 2.2(\dots)$

*Ignore any attempt to use zeros for billion*

*their 110 must be in the interval [88, 122] but not 100*

**M1**

49.5

oe

Condone 49 500 000 000 or

49 500 000 000 000 for full marks ft their 110 in the interval  
[88, 122] but not 100

Must have appropriate place value

SC2 Digits 495

A1 ft

[5]

**M4.** (a) 5

B1

(b) 94 and 60 **chosen**  
or 94 – their 60  
or their 94 – 60

M1

34

A1

[3]

**M5.** (a) (0).8(0)

B1

(b)  $\frac{7}{10}$

oe eg  $\frac{14}{20}$ ,  $\frac{70}{100}$

B1

(c) (0).75

B1

(d) 0.7,  $\frac{3}{4}$ , 80(%)

In any format

Allow correct answer or ft from their answers to a,b,c.

B1 ft

[4]

**M6.** (a)  $\frac{10}{50}$  or  $\frac{2}{10}$  or  $\frac{4}{20}$  or  $\frac{5}{25}$  or  $\frac{6}{30}$  or  $\frac{8}{40}$  **B1**

$$\frac{1}{5}$$

*ft their fraction correctly simplified*

**B1 ft**

(b)  $\frac{60}{100}$  ( $\times 50$ )

or  $5 \times 6$

or  $60\% = \frac{3}{5}$  seen or implied

or  $10\% = 5$  (squares)  
oe

**M1**

30

*20 more squares shaded on grid*

**A1**

20

*SC2 for  $4 \times 5$  or 4 columns*

**A1**

**[5]**

**M7.** (a) (i) 20 **B1**

(ii) As 115 divided by 4 does not give a whole number  
oe

**B1**

- (b) (i) 75 B1
- (ii)  $80 + 115 + 75 (= 270)$   
or  
 $5 + 25 + 40 (= 70)$   
 $115 - 25 (= 90)$   
or  $75 - 40 (= 35)$  M1
- their 270 – their 70  
*their 75 + their 90 + their 35* M1 dep
- 200  
SC1 340 or 165 or 125 A1
- (c) (i) White or W B1
- (ii) Silver or S or “black or white”  
or “white or black” or “B or W”  
or “W or B” B1
- (d) Ticks Cannot Tell and explains that they may be in the ‘other’ category  
oe B1
- [9]

- M8.** (a) 16 B1
- (b) 10 B1
- (c) 23 B1
- (d) 27 B1
- [4]

**M9.** (a) (i) 25(%)

**B1**

(ii) 0.3(0)

**B1**

(iii) 0.2(0)  $\frac{1}{4}$  30(%)

*Allow answers written as decimals or percentages*

**B1**

(b) (i) 12

**B1**

(ii) 3

**B1**

(c)  $3 \div 8$  or  $(1 \div 8) \times 3$

oe or  $\left(\frac{1}{8} =\right) = (0).125$

**M1**

(0).375

SC1 37.5% or 37.5

100

**A1**

[7]

**M10.**  $(5 + 1) \times 4$

**M1**

24

SC1 for 18 or 20 or 21 on answer line

**A1**

[2]

**M11.** (a)  $1.99 \times 6$  or  $199 \times 6 (= 1194)$

**M1**

11.94

SC1 119.40

SC1 12 (.00)

**A1**

(b)  $\frac{1}{2}$

B1 equivalent fraction to  $\frac{1}{2}$  eg  $\frac{30}{60}$

or B1  $\frac{n}{60}$  seen with its correct simplest form

SC1 50%

SC1 0.5

B2

(c) 10% circled

Any clear indication

B1

(d) Questionnaire/survey/interview

oe telephone everyone

B1

[6]

**M12.**  $8 \div 2 \times 3$  or  $8 \times 3 \div 2$  or 12

M1

their  $12 \times 4$

M1

48

A1

**Alternative method**

$4 \times 8$  or 32

M1

their  $32 \div 2 \times 3$

oe

M1

48

A1

[3]

**M13.** (a) 10, 18, 4, 8

B1 two or three correct

B2



(b)  $\frac{1}{4}$

B1 ft  $\frac{10}{40}$  oe

ft from their sun frequency

B1 correct cancelling to simplest form of their unsimplified

fraction,  $\frac{n}{40}$

SC1 0.25 or 25%

B2 ft

(c) (i) Sunny = 16 and Snow = 0

16, 20, 0, 4

SC2 Tallies worth B3

SC1 Tallies worth B2

B1

Rain = 20

B1

Fog = 40 – their 20 – their 16  
– their 0

B1 ft

(ii) Impossible

oe Word(s) eg no chance, never

B1 ft

Evens

oe Word(s) eg even, even chance

SC1 2 correct numerical probabilities  
for both marks ft from table

B1 ft

[9]

M14. (a)  $\frac{1}{4} \times 200$  or  $200 \div 4$

M1

50

A1

(b)  $320 \div$  their 50

M1 for sight of 6

Allow complete build up method

M1

7

A1

[4]

**M15.** Two equivalent fractions with the same denominator

eg  $\frac{2}{8}$  and  $\frac{1}{8}$  or  $\frac{4}{16}$  and  $\frac{2}{16}$

or  $\frac{8}{32}$  and  $\frac{4}{32}$

oe

or  $\frac{1}{4} + \frac{1}{8} \left( = \frac{3}{8} \right)$

*Allow 2 lists of equivalent fractions with at least 3 correct in each list*

eg  $\frac{1}{4} = \frac{2}{8} = \frac{3}{12} = \frac{4}{16} \dots$

and  $\frac{1}{8} = \frac{2}{16} = \frac{3}{24} = \frac{4}{32} \dots$

**M1**

Correct equivalent fraction

$1\frac{1}{2}$  or  $\frac{3}{16}$  or  $\frac{6}{32}$  oe

or  $\frac{3}{8} \div 2$

**M1**

$\frac{3}{16}$

**A1**

**Alternative method**

0.25 and 0.125 or

25% and 12.5%

**M1**

0.1875 or 18.75%

**A1**

$\frac{3}{16}$

**A1**

**[3]**

**M16.** (a) 
$$\frac{6}{6+69+25}$$
  

$$\frac{6}{100}$$
 **M1**

$$\frac{3}{50}$$
 **A1**

(b) 31 **B1**

(c) (i) Unlikely **B1**

(ii) Certain **B1**

[5]

**M17.** (a)  $400 + 400 + 300 (= 1100)$  **M1**

Total £1100 **A1**

$10\% \text{ of } 1100 = 110$  **B1**

$990 = 1100 - \text{£}110$   
 oe **B1**

(b)  $642.60 - 630$  **M1**

Their  $12.6 \div 630$  **M1**

2 **A1**

[7]

**M18.** (a) (3), (5), (7), 9, 11  
 (5), 7, 9, 11, 13  
 7, 9, 11, 13, 15  
 9, 11, 13, 15, 17  
 -1 eeo0 **B2**

(b)  $\frac{3}{20}$  oe

B1

(c)  $P(13) = \frac{3}{20}$  implies 15 winners in 100 plays

B1

(Chocolate costs) £7.50

B1

(Takings)  $100 \times 20$  (= £20)

B1

(Profit)  $£20 - £7.50$  (= £12.50)

B1

*Award partial marks for stages shown*

[7]

**M19.**  $60 \div 5 \times 3$  or  $60 \div 15 \times 4$   
oe

M1

Fiona = 36

A1

James = 16

A1

20

A1

[4]

**M20.** 12 or any common denominator used

eg,  $\frac{3}{12}$  or  $\frac{8}{12}$

M1

$\frac{11}{12}$

A1

[2]

**M21.** (a)  $3 \times 4$

$\frac{3}{4}$  of grid identified

**M1**

12

**A1**

(b)  $\frac{5}{20} (\times 100)$   
oe

**M1**

25

**A1**

(c)  $\frac{1}{2} \times 2 \times 2 (= 2)$

or states 2 out of 3 shaded

*Identifies 1 square unshaded*

*or 4 quarters unshaded*

*or 2 squares shaded* oe

**M1**

$\frac{2}{3}$

**A1**

**[6]**

**M22.** (a) 240

**B1**

375

**B1**

(b)  $\frac{444}{555}$

*B1 for any equivalent fraction with sum  $\geq 900$  eg,  $\frac{400}{500}$*   
*or sum  $\leq 1100$  eg,  $\frac{480}{600}$*

**B2**

**[4]**

**M23.** (a)  $\frac{2}{8}$  and  $\frac{6}{24}$   
*B1 One correct (and one incorrect)*  
*B1 Two correct and one incorrect*  
*Accept any indication*

**B2**

(b) 25

**B1**

(c) Likely

*Accept any indication*

**B1**

(d) Attempts a quarter circle

*Be generous if intention clear*

**B1**

**[5]**

**M24.**  $\frac{1}{8} + \frac{1}{4}$   
 oe

**M1**

$\frac{3}{8}$   
 oe

**A1**

$\frac{5}{8}$  (= 100)  
 1 – their  $\frac{3}{8}$

**M1**

160

**A1**

**[4]**

- M25.** (a)  $\frac{1}{4}$   
*oe Fraction* **B1**
- (b) 50(%) **B1**
- (c) Unlikely circled  
*oe Unambiguous indication* **B1**
- [3]**

- M26.** (a)  $2 + 1$  and  $\frac{1}{5} + \frac{1}{3}$  attempted **M1**
- $\frac{3}{15} + \frac{5}{15}$   
*Correct common denominator and at least one common numerator* **M1**
- $3\frac{8}{15}$   
*oe Fraction* **A1**
- Alt**
- $\frac{11}{5} + \frac{4}{3}$   
*At least one correct* **M1**
- Their  $\frac{33}{15} + \frac{20}{15}$   
*Correct common denominator and at least one correct numerator for their improper fractions (at least one correct)* **M1**
- $\frac{53}{15}$   
*oe Fraction* **A1**
- (b) Correct plots for final 5 points  
*B1 For four correct plots* **B2**
- (c) Ian  
*(60, 48)* **B1**

- (d) Draws suitable line of best fit  
*Straight line only and positive gradient.*

M1

Answers in range 65 – 75  
*lobf not required for M1 A1*

A1

[8]

**M27.**       $4 \times 12$

*or 48*

M1

(their 48)  $\div 3$  or 16  
*oe*

M1

$80 \div$  their 16  
*oe*

M1

5  
*SC2 for 5 with no working*

A1

[4]

**M28.**       $40 \div 100 \times 60$  or  $4 \times 6$   
*oe*

M1

$55 \div 5 \times 2$   
*oe*

M1

24 **or** 22

A1

24 **and** 22 **and** conclusion

A1

[4]



**M29.**       $55/100 \times 3$

M1

1.65 (litres)

A1

$3/4 \times 2.5$

*oe only penalise once for repeated error*

M1

1.875 (litres) + (B or 2.5 litre)

*oe*

A1

[4]

**M30.**       $\frac{1}{4} \times 2200$  or  $\frac{2}{5} \times 2200$   
*13/20 or 1/4 + 2/5*  
*7/20 on its own*

M1

2200 - their (550 + 880)

*(1 - their 13/20) × 2200 gets M2*

DM1

770

A1

[3]

**M31.**      (a)    125

B1

(b)     $\frac{250 - \text{their } 125}{10}$

M1

12.50

*12.5 is M1A0*

A1 ft

[3]

