



DEEPENING UNDERSTANDING ANSWER SHEET

YEAR 5 PIM – FRACTIONS AS OPERATORS

Fluency 1

Marlon has added 3 lots of $\frac{5}{6}$.

$$4 \times \frac{3}{8} = 1.5$$

$$\frac{5}{12} \text{ multiplied by } 6 = 2.5$$

Fluency 2

The answer is the same. Working out a fraction of an amount is the same as multiplying the fraction by the amount.

$$6 \times \frac{4}{6} = 4$$

$$\frac{5}{9} \text{ multiplied by } 45 = 25$$

Fluency 3

$$2 \text{ lots of } \frac{4}{10}: \frac{4}{10} + \frac{4}{10} = \frac{8}{10}$$

$$\frac{4}{10} \text{ of } 2: 2 \div 10 = 0.2 \text{ and } 0.2 \times 4 = 0.8 = \frac{8}{10}$$

2 lots of $\frac{4}{10}$ is the most efficient method.

$$\frac{2}{9} \times 3: \frac{2}{9} + \frac{2}{9} + \frac{2}{9} = \frac{6}{9} \text{ or } \frac{2}{3}$$

$$\frac{2}{9} \text{ of } 3: 3 \div 9 = 0.33 \text{ and } 0.33 \times 2 = 0.66 = \frac{2}{3}$$

$\frac{2}{9} \times 3$ is the most efficient method.

$$12 \text{ multiplied by } \frac{3}{4}: \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} = 9$$

$$\frac{3}{4} \text{ of } 12: 12 \div 4 = 3 \text{ and } 3 \times 3 = 9$$

$\frac{3}{4}$ of 12 is the most efficient method.



Reasoning 1

Modelled DAB Reasoning Responses

D – I would use Ranjit's method.

A – I would divide 48 by 12 then multiply this by 8.

B – Ranjit has used times tables facts to solve the calculation and this is more efficient than Darcey's method where long multiplication and division is needed. It is harder to work out the answer to 8×48 than 4×8 and it is trickier to divide 384 by 12 than 48 by 12.

Reasoning 2

Modelled DAB Reasoning Response

D – Marlon could use different methods to solve the problem.

A – It would be most appropriate to work out $\frac{5}{9}$ of 243 then subtract this from the total.

B – $\frac{5}{9}$ of 243: $243 \div 9 = 27$ and $27 \times 5 = 135$. $243 - 135 = 108$ feathers.

$\frac{5}{9} \times 243$: $\frac{5}{9} \times \frac{243}{1} = \frac{1,215}{9}$ and $1,215 \div 9 = 135$. $243 - 135 = 108$ feathers.

Reasoning 3

Modelled DAB Reasoning Response

D – False

A – 12 lots of 3 is not equal to $\frac{4}{8}$ of 96 and $\frac{7}{9} \times 450$ is not equal to one third of 160.

B – 12 lots of 3 = 36 and $\frac{4}{8}$ of 96 = 48 so 12 lots of 3 < $\frac{4}{8}$ of 96

$\frac{7}{9} \times 450 = 350$ and one third of 162 = 54 so $\frac{7}{9} \times 450 >$ one third of 162

Reasoning 4

Modelled DAB Reasoning Response

D – The statements are correct.

A – One eighth of 56 is the same as 56 divided by 8, one sixth of 36 is the same as 36 lots of $\frac{1}{6}$ and $\frac{4}{5}$ of 25 is the same as 4 divided by 5 times 25.



B – One eighth of 56 = 7 and $56 \div 8 = 7$

One sixth of 36 = 6 and 36 lots of $1/6 = 36/6 = 6$

$4/5$ of 25 = 20 and $4 \div 5 (0.8) \times 25 = 20$

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<https://www.deepeningunderstanding.co.uk/product/dab-reasoning-posters/>

Problem Solving

Alfie started off with 48 sweets.

When one quarter fell in the puddle, he was left with 36.

He gave one sixth of these to Darcey (6) leaving him with 30.

He ate one fifth of these (6) leaving him with 24.

He gave one third of these (8) to Anita and Asha leaving him with 16 sweets.

To work this out...

Alfie was left with 16 sweets which is $2/3$ of the amount he had before giving $1/3$ to Anita and Asha. Before he gave them some sweets, he must have had 24.

24 sweets is $4/5$ of the amount he had before eating $1/5$ of the sweets. Before he ate the sweets, he must have had 30.

30 sweets is $5/6$ of the amount he had before giving $1/6$ of them to Darcey. Before he gave $1/6$ to Darcey, he must have had 36.

36 sweets is $3/4$ of the amount he had before dropping the bag in the puddle. Before dropping the bag, he must have had 48 sweets.

