

Assessing students' work

Note: The work below is from the UK version of the task. Please read '£' as '\$' and 'p' as '¢' – the task is otherwise identical.

The following descriptions indicate typical levels of performance. After each description is an example of some work at this level.

Little progress

- **Representing:** Interprets the pie chart and words and selects some appropriate information from them.
- **Analysing:** Performs some calculations to determine quantities and costs.
- **Interpreting and evaluating:** Interprets calculations to make decisions about the quantity of one or more flavours of ice cream to purchase and resulting costs, though these may contain inaccuracies.
- **Communicating and reflecting:** Presents some calculations.

Sample response: Sam

Sam successfully considers the costs of making and selling 150 vanilla ice creams. No further work is shown.

$$60 \times 5 = 300$$

1. 50% of 60 = 30 vanilla

$$30 \times 5 = 150$$

15 tubs	=	£ 30
150 cones	=	£ 07.50
Total	=	£ 37.50

cost	=	£ 37.50
income	=	£ 120
total	=	£ 82.50

Questions for Sam:

Sam could be encouraged to improve his response by asking the following questions:

- *Have you enough ice creams for 300 people?*
- *What else is needed?*

Some progress

- **Representing:** Interprets the pie chart and words and selects some appropriate information from them.
- **Analysing:** Works logically, performing some calculations to determine quantities and costs.
- **Interpreting and evaluating:** Interprets calculations to make decisions about the quantities of different flavours of ice cream to purchase and resulting costs, though these may contain errors or be incomplete.
- **Communicating and reflecting:** Presents some calculations clearly.

Sample response: Sally

Sally considers buying and selling the four different flavours of ice cream. The number of tubs for vanilla and chocolate chip are correct, but there are some arithmetical errors when calculating the number of tubs for strawberry and mint.

Ice cream

50% = Vanilla = 30 people
 25% = Strawberry = 15 people
 15% = chocolate chip = 9 people
 10% = mint = 6 people

Vanilla = 15 tubs
 Strawberry = ~~10~~ 10 tubs
 Choc chip = 5 tubs = 5
 mint = 5 tubs = 5

$$\begin{array}{r} 15 \\ + 10 \\ + 5 \\ + 5 \\ \hline 35 \\ 1 \end{array}$$

300 ice creams

35 tubs altogether

$$35 \times 2 = 70$$

70 for the tubs

$$5p \times 300 = 1500$$

Questions for Sally:

Sally could be encouraged to improve her response by asking the following questions:

- You have calculated that you need to purchase 35 tubs of ice cream. How many ice cream cones will this make? .
- You have calculated the total cost of the ice cream and the tubs. How do you find the profit?

Substantial progress

- **Representing:** Interprets pie chart and words and selects most of the appropriate information from them.
- **Analysing:** Works logically, performing calculations to determine quantities, costs and profits.
- **Interpreting and evaluating:** Interprets their calculations to make decisions about the quantities of different flavours of ice cream to purchase and resulting profit, though these may contain some errors. E.g. Omits the cost of the cones in the calculations.
- **Communicating and reflecting:** Gives a detailed and reasonably clear explanation of method used.

Sample response: George

George correctly considers buying and selling the four different flavours of ice cream. He rounds up both fractional calculations, so that he buys too much ice cream. However, he does not consider the cost of buying the cones so the overall profit is not correct.

$$\begin{aligned} 1) \text{ Vanilla} &= 300 \div 2 = 150 \\ \text{Cost: } &£30.00 \\ \text{Quantities: } &15 \text{ tubs} \end{aligned}$$

$$\begin{aligned} &= 150 \text{ ice creams of vanilla} \\ &150 \div 10 = 15 = \text{number of tubs} \\ &15 \times 2 = £30 = \text{cost of tubs} \end{aligned}$$

$$\begin{aligned} 2. \text{ Strawberry} &= 250 = 300 \div 4 = 75 \\ \text{Cost: } &£16 \\ \text{Quantities: } &8 \text{ tubs} \end{aligned}$$

$$\begin{aligned} &= 75 \text{ ice creams of strawberry} \\ &= 75 \div 10 = 7.5 = 8 = \text{number of tubs} \\ &= 8 \times 2 = £16 \end{aligned}$$

$$\begin{aligned} 3. \text{ choc chip} &= 150 = 300 \div 2 = 150 \\ \text{Cost: } &£10 \\ \text{Quantities: } &5 \text{ tubs} \end{aligned}$$

$$\begin{aligned} &= 45 \text{ ice creams of choc chip} \\ &= 45 \div 10 = 4.5 = 5 \text{ tubs of choc chip} \\ &= 5 \times 2 = £10 \end{aligned}$$

$$\begin{aligned} 4. \text{ Mint} &= 100 = 300 \div 10 = 30 \\ \text{Cost: } &£6 \\ \text{Quantities: } &3 \text{ tubs} \end{aligned}$$

$$\begin{aligned} &= 30 \text{ ice creams of mint} \\ &= 30 \div 10 = 3 \text{ tubs of mint} \\ &= 3 \times 2 = £6 \end{aligned}$$

$$2. \text{ } \cancel{£}V + S + C + M = £62 = \text{total cost}$$

$$150 + 75 + 45 + 30 = 300 \text{ ice creams} = £240$$

$$\text{Profit} = £178.00$$

Questions for George:

George could be encouraged to improve his response by asking the following questions:

- Have you considered how many cones can be made using the total number of tubs you suggest buying?
- Can you reduce this number, to reduce waste?
- What would be your revised figure for the profit?

Task accomplished

- **Representing:** Interprets pie chart and words and selects all the appropriate information from them.
- **Analysing:** Works logically, performing accurate calculations to determine quantities, costs and profits.
- **Interpreting and evaluating:** Interprets their calculations to make correct decisions about the quantities of different flavours of ice cream to purchase and resulting profit.
- **Communicating and reflecting:** Gives a detailed and clear explanation of method used.

Sample response: Saul

Saul correctly considers buying and selling the four different flavours of ice cream including the cost of the cones. He rounds up the number of tubs needed for both strawberry and choc chip which means that everyone is likely to be satisfied, but he will have some surplus ice cream. His work is clear but it could be explained more carefully.

ICE CREAM

1) 150 ice creams = vanilla
 75 ice creams = strawberry
 45 = choc chip
 30 = mint

ten cones = 1 tub
 1 tub = £2
 1 cone (empty) = 5p

Choc ice cream = £12.25
 Strawberry ice cream = £19.75

150 cones = 150 x 5 = £150
 150 ÷ 10 = 15. 15 tubs = £30.

Vanilla ice cream = £37.50
 Mint ice cream = £7.50

2 x 3 = £6
 5 x 30 = £1.50
 2 x 5 = £10
 5 x 45 = £22.5

2) choc + straw + van + mint = } 2 x 8 = £16
 £77 } 5 x 75 = £3.75

80p x 300 = £240.000 = £240
 £240 - £77 = £163 = £163 profit

£163 profit

Questions for Saul:

Saul could be encouraged to improve his response by asking the following questions:

- How much ice cream will you have left over at the end of the day?
- Show this answer to a neighbour and see if he can follow your explanation. Can you make the reasoning any clearer?