Unit 4 · Simplification

HARDER PRACTICE QUESTIONS · ANSWER KEY

Full marks 33

Give the marks for the points in the marking scheme; an answer in other words that says the same is right.

1 Put in the signs

ANSWER HA · 4

i. $\mathbf{12 \times 4 \div 3 - 2 + 5} = 48 \div 3 - 2 + 5 = 16 - 2 + 5 = 14 + 5 = 19$ ✓

ii. $\mathbf{12 \div 4 - 3 + 2 \times 5} = 3 - 3 + 10 = 0 + 10 = 10$ ✓

Each has only this one answer.

MARKING SCHEME

✓ i. The signs $\times \div - +$.

✓ i. Checked by the order of operations.

✓ ii. The signs $\div - + \times$.

✓ ii. Checked by the order of operations.

2 The missing number

ANSWER A · 3

Work backwards. Before adding 5, the value was $41 - 5 = 36$.

So $48 \div \ldots\ldots \times 3 = 36$. Before multiplying by 3, it was $36 \div 3 = 12$.

So $48 \div \ldots\ldots = 12$, and the missing number is $48 \div 12 = \mathbf{4}$.

Check: $48 \div 4 \times 3 + 5 = 12 \times 3 + 5 = 36 + 5 = 41$ ✓

MARKING SCHEME

✓ $41 - 5 = 36$.

✓ $36 \div 3 = 12$.

✓ The missing number is 4, checked.

3 Spot the error

ANSWER U · 3

i. He went from left to right all the way. The ÷ and × must be done **first**.

ii. $36 - 12 \div 4 + 2 \times 3$

$= 36 - 3 + 2 \times 3$ [divide]

$= 36 - 3 + 6$ [multiply]

$= 33 + 6$ [take away]

$= \mathbf{39}$ [add]

MARKING SCHEME

✓ ÷ and × come before − and +.

✓ $36 - 3 + 6$.

✓ 39.

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4 Which statements fit the story?

ANSWER A · 4

B and C fit. Both take the notebooks ($4 \times 60 = 240$) and the pen (25) away from 500. 4×60 and 60×4 are the same.
A **adds** the pen's price to his change instead of taking it away: it gives Rs. 285.
D takes 500 away from what he spent, 265, and you can't take 500 from 265.
Change: $500 - 240 - 25 = 260 - 25 =$ **Rs. 235**.

MARKING SCHEME

- ✓ B and C fit.
- ✓ Why A is wrong.
- ✓ Why D is wrong.
- ✓ Rs. 235.

5 A school trip

ANSWER A · 3

$3 \times 42 - 118 - 6$
$= 126 - 118 - 6$ [multiply]
$= 8 - 6$ [take away]
$=$ **2 empty seats** [take away]

MARKING SCHEME

- ✓ The statement $3 \times 42 - 118 - 6$.
- ✓ $3 \times 42 = 126$.
- ✓ 2 empty seats.

6 Equal or not?

ANSWER U · 3

i. $24 \div 4 \times 2 = 6 \times 2 = 12$, but $24 \div 2 \times 4 = 12 \times 4 = 48$. **Not equal**: changing the order of $\div$ and $\times$ changes the answer.
ii. $7 \times 8 + 7 \times 2 = 56 + 14 = 70$, and $7 \times 10 = 70$. **Equal**: 8 sevens and 2 sevens make 10 sevens.
iii. $50 - 20 + 10 = 30 + 10 = 40$, but $50 - 30 = 20$. **Not equal**: the 10 is added, not taken away.

MARKING SCHEME

- ✓ i. 12 and 48, not equal.
- ✓ ii. 70 and 70, equal.
- ✓ iii. 40 and 20, not equal.

7 A shop calculator

ANSWER A · 3

i. It does $5 + 3 = 8$ first, then $8 \times 4 =$ **32**.
ii. $5 + 3 \times 4 = 5 + 12 =$ **17**.
iii. Do the multiplication first: **3 × 4 + 5 =**. The calculator works $3 \times 4 = 12$, then $12 + 5 = 17$.

MARKING SCHEME

- ✓ 32.
- ✓ 17.
- ✓ $3 \times 4 + 5 =$.

8 Biggest and smallest

ANSWER

The three different answers are $2 + 6 \times 3 = 20$, $3 + 6 \times 2 = 15$ and $6 + 3 \times 2 = 12$. (Swapping the two numbers in the $\times$ gives the same answer.)

i. **$2 + 6 \times 3 = 20$** (or $2 + 3 \times 6$).
ii. **$6 + 3 \times 2 = 12$** (or $6 + 2 \times 3$).

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iii. The × is done first, so put the **two biggest numbers in the multiplication** and the smallest after the +. HA · 3

MARKING SCHEME

✓ $2 + 6 \times 3 = 20$.

✓ $6 + 3 \times 2 = 12$.

✓ The two biggest numbers go into the multiplication.

9 Make your own

MARKING SCHEME A · 3

✓ A story that matches every part of the statement.

✓ $100 - 60 + 8 = 48$.

✓ What 48 means in the story.

10 Think: four 4s

ANSWER HA · 4

i. $\mathbf{4 \div 4 + 4 \div 4} = 1 + 1 = 2$

ii. $\mathbf{4 + 4 - 4 \div 4} = 4 + 4 - 1 = 7$

iii. $\mathbf{4 + 4 + 4 \div 4} = 4 + 4 + 1 = 9$

iv. $\mathbf{4 \times 4 + 4 \div 4} = 16 + 1 = 17$

Other orders of the same signs are right too, such as $4 \div 4 + 4 + 4 = 9$.

MARKING SCHEME

✓ 2, correct.

✓ 7, correct.

✓ 9, correct.

✓ 17, correct.

Marks by level	Knowledge	Understanding	Application	Higher ability	Total
Marks	0	6	16	11	**33**

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