Unit 7 · Percentage

HARDER PRACTICE QUESTIONS · ANSWER KEY

Full marks 34

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

1 Which subject was best?

ANSWER A · 4

i. Nepali $\frac{36}{40} \times 100\% = \frac{3600}{40}\% = 90\%$. Maths $\frac{42 \times 2}{50 \times 2} = \frac{84}{100} = 84\%$. Science $\frac{17 \times 5}{20 \times 5} = \frac{85}{100} = 85\%$.

ii. **Nepali (90%), Science (85%), Maths (84%)**. Science comes before Maths though 17 is a much smaller number than 42.

iii. 90% is 90 out of 100, which is 45 out of 50. So she needed $45 - 42 =$ **3 more marks**.

MARKING SCHEME

- ✓ 90%, 84% and 85%.
- ✓ The order: Nepali, Science, Maths.
- ✓ 90% of the marks is 45 out of 50.
- ✓ 3 more marks.

2 A farm in three parts

ANSWER A · 4

i. $\frac{3}{10} = \frac{30}{100} =$ **30%**.

ii. The whole land is 100%: $100\% - 45\% - 30\% =$ **25%**.

iii. **0.25** and $\frac{\mathbf{25}}{\mathbf{100}}$.

iv. Maize and vegetables together: $30\% + 25\% = 55\%$, more than 45%. So **maize and vegetables together** cover more.

MARKING SCHEME

- ✓ 30% maize.
- ✓ 25% vegetables.
- ✓ 0.25 and $\frac{25}{100}$.
- ✓ Maize and vegetables, 55% against 45%.

3 Spot the errors

ANSWER U · 3

i. $0.5 \times 100\% =$ **50%**: 0.5 is half, and half is 50 out of 100. And $3\% = \frac{3}{100} =$ **0.03**.

ii. Decimal to percentage: move the point **two** places to the right (× 100). Percentage to decimal: move it **two** places to the left (÷ 100). He moved it only one place each time.

MARKING SCHEME

- ✓ $0.5 = 50\%$.
- ✓ $3\% = 0.03$.
- ✓ The point moves two places, × 100 or ÷ 100.

4 A fruit survey

ANSWER

i. $20 - 9 - 4 - 2 =$ **5** chose orange.

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ii. Multiply the top and the bottom by 5, since $20 \times 5 = 100$. Mango $\frac{9}{20} = \frac{45}{100} = \mathbf{45\%}$. Banana $\frac{4}{20} = \frac{20}{100} = \mathbf{20\%}$. Apple $\frac{2}{20} = \frac{10}{100} = \mathbf{10\%}$. Orange $\frac{5}{20} = \frac{25}{100} = \mathbf{25\%}$. A · 3

iii. 9 is how many students, out of 20. A percentage is out of **100**: 9 out of 20 is the same share as 45 out of 100, so mango got 45%.

MARKING SCHEME

- ✓ 5 chose orange.
- ✓ 45%, 20%, 10% and 25%.
- ✓ 9 is out of 20, not out of 100.

5 Put them in order

ANSWER U · 3

Change them all into percentages: 0.6 = 60%, 58%, $\frac{3}{5} = \frac{60}{100} = 60\%$, 0.065 = 6.5%.

0.6 and $\frac{3}{5}$ are equal.

Order: **0.065, 58%, 0.6 = $\frac{3}{5}$**.

MARKING SCHEME

- ✓ All four in the same form.
- ✓ 0.6 and $\frac{3}{5}$ are equal.
- ✓ The order, smallest first.

6 A frame on a grid

ANSWER HA · 4

i. The top and bottom rows have 10 each: 20. The two sides have 8 more each (their corners are already counted): 16. In all **36 squares**, so **36%**.

ii. $100\% - 36\% = \mathbf{64\%}$. (Check: the inside is 8 by 8 = 64 squares.)

iii. The second frame goes round the 8 by 8 square: 8 + 8 + 6 + 6 = 28 squares. Colored now: 36 + 28 = 64 squares, **64%**.

MARKING SCHEME

- ✓ 36 squares.
- ✓ 36%.
- ✓ 64% not colored.
- ✓ 64% after the second frame.

7 Taller than before

ANSWER HA · 3

i. $\frac{3}{2}$.

ii. $\frac{3}{2} = \frac{150}{100} = \mathbf{150\%}$.

iii. The girls are a **part** of the class, so they can't be more than the whole class, 100%. Here we compare the height now with last year's height, and the tree has grown **more than** one whole of last year's height.

MARKING SCHEME

- ✓ $\frac{3}{2}$.
- ✓ 150%.
- ✓ A part of a whole can't pass 100%, but this compares two amounts.

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8 Work backwards

ANSWER A · 3

i. $\frac{80}{100}$.

ii. Her mark is a fraction out of 25. To make the denominator 100, multiply the top and the bottom by 4, since $25 \times 4 = 100$. So her mark $\times 4 = 80$, and her mark is $80 \div 4 = \mathbf{20}$. Check: $\frac{20 \times 4}{25 \times 4} = \frac{80}{100}$. ✓

iii. 100% is the full mark, **25**. For 4%, the same way: mark $\times 4 = 4$, so **1 mark**.

MARKING SCHEME

✓ $\frac{80}{100}$.

✓ 20 marks.

✓ 25 marks and 1 mark.

9 Is it possible?

ANSWER HA · 4

i. **No.** Girls and boys are the whole class, so their percentages add up to 100%. 55% + 55% = 110%.

ii. **No.** The full marks are 100% of the test. You can't get more marks than there are.

iii. **Yes.** 0.5% is half of 1%: 1 person in every 200. A percentage can be less than 1.

iv. **Yes.** $2.5 \times 100\% = 250\%$: 2.5 is two and a half wholes.

MARKING SCHEME

✓ i. No, they would make 110%.

✓ ii. No, more than the full marks.

✓ iii. Yes, a percentage can be less than 1.

✓ iv. Yes, $2.5 \times 100\% = 250\%$.

10 Think

ANSWER HA · 3

Dipesh: $\frac{3}{8} \times 100\% = \frac{300}{8}\% = 37\frac{4}{8}\%$, which is $37\frac{1}{2}\%$. Prarthana: $\frac{4}{10} = \frac{40}{100} = 40\%$.

Prarthana's seeds did better: 40% is more than $37\frac{1}{2}\%$. Counting the seeds that didn't sprout isn't fair, because she sowed more seeds. Percentages compare both "out of 100".

MARKING SCHEME

✓ Dipesh's $37\frac{1}{2}\%$.

✓ Prarthana's 40%.

✓ Prarthana did better; the counts aren't fair because the numbers of seeds differ.

Marks by level	Knowledge	Understanding	Application	Higher ability	Total
Marks	0	6	14	14	**34**

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