

Primary 3 · Mathematics · Advanced Maths Practice

Mixed problems 2

Time **40 min** Marks **18** Questions **6**

Answers are printed in red after each question, with the working where it matters. Marks in brackets show how a marker would split them.

- 1** Mei has four times as many stickers as Ken. If Ken is given 15 more stickers, he will have half as many stickers as Mei. How many stickers does Mei have? [3]



1. Let Ken's stickers be 1 unit. Mei has 4 units.
2. After the gift, Ken has half of Mei's 4 units, which is 2 units. So 15 stickers = 2 units - 1 unit = 1 unit.
3. Mei has 4 units = $4 \times 15 = 60$.

ANSWER **60 stickers**

- 2** Four painters take 6 hours to paint a hall. Working at the same rate, how long would three painters take to paint the same hall? [3]

1. The whole job is $4 \times 6 = 24$ painter-hours (one painter alone would take 24 hours).
2. Three painters share the 24 hours equally: $24 \div 3 = 8$ hours.

ANSWER **8 hours**

Common slip: $6 \div 4 \times 3 = 4.5$ hours treats fewer painters as faster. Fewer painters must take longer.

- 3** A pen, two erasers and a ruler cost \$9 altogether. Three pens and an eraser cost \$10 altogether. A ruler and four erasers cost \$8 altogether. How much does a ruler cost? [3]

1. Compare the first and third sets. 1 pen + 2 erasers + 1 ruler = \$9 and 4 erasers + 1 ruler = \$8, so 1 pen costs \$1 more than 2 erasers.
2. In the second set, replace each pen with 2 erasers + \$1: 6 erasers + 1 eraser + \$3 = \$10, so 7 erasers cost \$7 and 1 eraser costs \$1.
3. Ruler = $\$8 - 4 \times \$1 = \$4$.

ANSWER **\$4**

Accept any method that finds the eraser first (eraser \$1, pen \$3, ruler \$4).

- 4** On a farm, the number of hens was 5 times the number of ducks. After 12 ducks were sold, the number of hens became 8 times the number of ducks. How many hens are there on the farm? [3]

1. The number of hens does not change, so make it the whole. Before: ducks = hens $\div$ 5. After: ducks = hens $\div$ 8.
2. Use 40 as a common unit for the hens: before, ducks = 8 units; after, ducks = 5 units. The 3 units sold = 12 ducks, so 1 unit = 4.
3. Hens = 40 units = $40 \times 4 = 160$.

ANSWER **160 hens**

- 5** Pipe A can fill an empty pool in 3 hours and pipe B can fill it in 6 hours. A drain at the bottom can empty the full pool in 4 hours. If both pipes and the drain are open at the same time, how long will it take to fill the empty pool? [3]

1. Take the pool as 12 units (12 is a multiple of 3, 6 and 4).
2. In 1 hour: A fills $12 \div 3 = 4$ units, B fills $12 \div 6 = 2$ units, the drain removes $12 \div 4 = 3$ units.
3. Net gain each hour = $4 + 2 - 3 = 3$ units, so 12 units take $12 \div 3 = 4$ hours.

ANSWER **4 hours**

- 6** Rani has 18 more \$5 notes than \$10 notes. The total value of her \$10 notes is \$35 more than the total value of her \$5 notes. What is the total value of her \$5 notes? [3]

1. Pair each \$10 note with one \$5 note. The 18 extra \$5 notes are worth $18 \times \$5 = \90 .
2. For the \$10 notes to be worth \$35 more overall, the pairs must make up $\$90 + \$35 = \$125$.
3. Each pair gives a difference of \$5, so there are $\$125 \div \$5 = 25$ pairs: 25 ten-dollar notes and $25 + 18 = 43$ five-dollar notes.
4. Total value of \$5 notes = $43 \times \$5 = \215 .

ANSWER **\$215**

Check: \$10 notes are worth \$250, and $\$250 - \$215 = \$35$.

Marking notes

- Award 1 mark for a correct model or first step, 1 mark for the method carried through, 1 mark for the answer with unit.
- A correct answer with no working scores 1 mark only.

END OF PAPER