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11+ PAST PAPER PACK

Highgate School 11+ Maths

Complete Past Paper Pack

CONTENTS

Your name:

HIGHGATE

Mathematics

Sample 11+ Paper A

You should read each question very carefully before attempting to answer it. Remember to show clearly all your working.

You should write your answers in the boxes given.

If you cannot answer part of a question, you should move onto the next part. However, you must NOT turn to the next page until you are told to do so.

If you have finished a question you should spend any spare time checking your answers on that page: you will not be allowed to go back to that question later.

Do not worry if you find part of a question difficult: miss it out and try the next one.

The exam will last for approximately 45 minutes.

Question 1

Remember to include your working to show us how you find your answers.

The following questions are about a butcher's shop.

a) Karim buys 7 burgers and 5 steaks.
Burgers cost 61p each and steaks cost 84p each.

How much did Karim spend in total?

Karim spends £ ____

b) Sausages come in packs of 8. Each pack costs £1.30

James spends £9.10 on sausages. How many sausages did James get?

James gets ____ sausages.

c) Tyler buys 16 chicken wings, and receives £14.72 change from a £20 note.

What is the price of a chicken wing?

One chicken wing costs ____ pence

d) The butcher also sells slices of turkey.

Donald buys three quarters of the slices in the shop. Alisha then buys a sixth of the remaining slices.

Alisha bought 3 slices. How many more slices than Alisha did Donald buy?

Donald bought ☐ more slices of turkey than Alisha.

e) Lamb chops are three times more expensive than pork chops.

Tina buys 2 lamb chops and 2 pork chops. She spends £9.60 in total.

How much do lamb chops and pork chops cost?

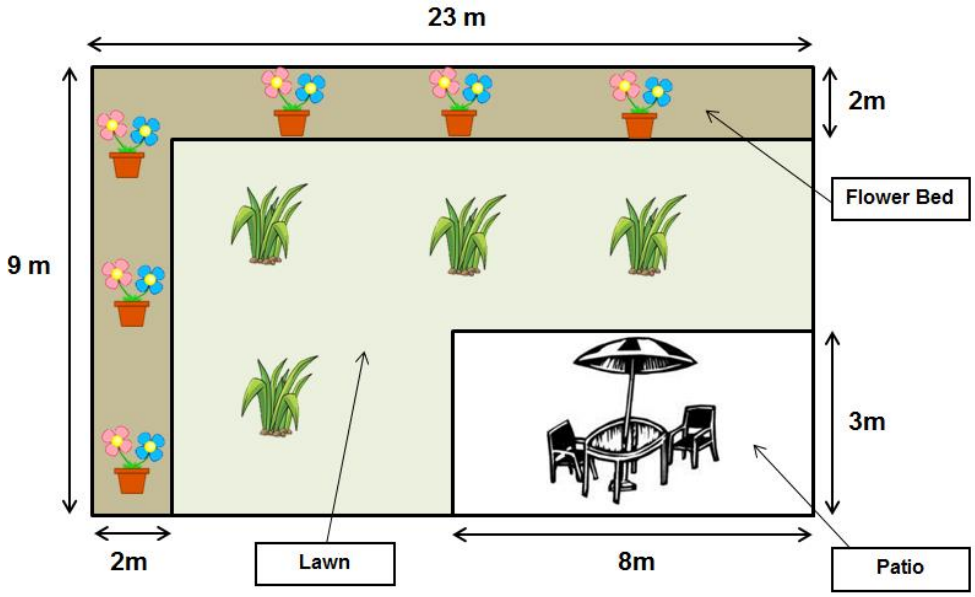
A lamb chop costs £☐ , a pork chop costs £☐

WAIT: do NOT turn over until you are told to do so.
If you have time, check your answers on this page.

Question 2

Remember to include your working to show us how you find your answers.

Mr Green's garden is a mixture of lawn, patio and flower beds. A plan of the garden is shown below, with some (but not all) of the measurements.
The picture is <u>not drawn to scale</u>.



a) What is the area covered by Mr Green's lawn?

The area of the lawn is ____ m^2

b) Mr Green buys 6 flower pots. Flower pots cost £4.00 each.
Mr Green has a voucher for *"15% off"*.
How much does Mr Green spend on flower pots if he uses the voucher?

Mr Green spends £ ____

c) Mr Green wants to lay paving stones on his patio.
The stones are rectangles measuring 50 cm x 20 cm.

How many paving stones are needed to pave the patio?

The number of paving stones needed is ____

d) The area of the flower bed is 60m^2.

Three sacks of fertilizer are needed for every 4m^2 of flower bed.

Sacks cost £10 each, but are on offer:
"buy four sacks and get a fifth sack free".

How much does it cost to fertilize the flower bed?

WAIT: do NOT turn over until you are told to do so.
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The total cost is £ ____

Question 3

a) Tim is going paintballing. Entry into paintballing costs £23, but then you also have to pay £6 per 100 paintballs that you use.

Tim spent £65 in total. How many paintballs did he use?

Tim uses ____ paintballs

b) Janice is running a bath. She mixes hot water with cold water to make sure the temperature is just right.

She uses 5 times more hot water than cold water. Janice's bath holds 90 litres of water in total. How much hot water does she use?

Janice uses ____ litres of hot water

c) Bob the Builder is filling a hole with a mixture of gravel and sand.

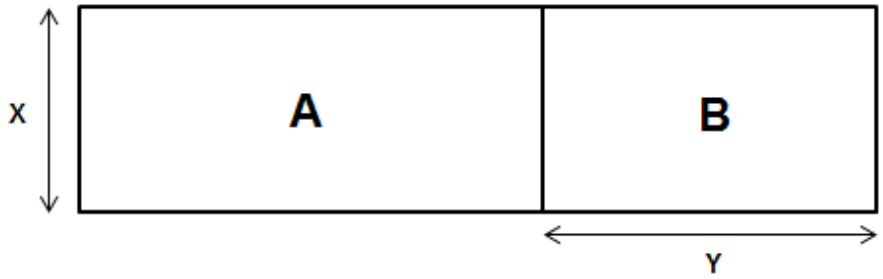
234kg of sand are needed to make 400kg of the mixture.

Bob makes 1000kg of the mixture.

How much **gravel** does Bob need?

kg

d) In the picture below, rectangle A has an area of 70cm^2, and rectangle B has an area of 63cm^2. The side lengths of the rectangles are whole numbers.
The sides labelled X and Y are both longer than 1cm.



Find the lengths of the sides labelled X and Y.

X is ____ cm, and Y is ____ cm

e) Victoria the vet is weighing her pets.
Her rabbit and her cat together weigh 10kg.
Her cat and her dog together weigh 24kg.
Her dog and her rabbit together weigh 20kg.

How much do all 3 of her pets weigh when weighed together?

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Together all 3 pets weigh ____ kg

Question 4

Remember to include your working to show us how you find your answers.

a) In the town of Mathsville there are 360 residents.
45% of the residents are children, the rest are adults.
How many adults are there in Mathsville?

____ adults

b) Numbertown Primary School has 280 pupils. 56 of these pupils are girls.
What percentage of the pupils are boys?

____ %

c) The price of a bus ticket from Mathsville to Numbertown has **increased** by 50% in the past year. A bus ticket now costs £1.80

What did it cost a year ago?

A bus ticket cost £ a year ago

d) Mathsville Maths Supplies is a shop selling maths equipment.

Tina bought 4 calculators and 3 protractors for £16.10
Ahmed bought 2 calculators and 1 protractor for £7.50

How much does a calculator cost, and how much does a protractor cost?

A calculator costs £ , a protractor costs £

e) Football is very popular in Numbertown.

Two fifths of the population support London Mathletic.
The rest support either Mathsville United or the Counting Crows.
Twice as many people support Mathsville United than support the Counting Crows.
500 people support the Counting Crows.

What is the total population of Numbertown?

WAIT: do NOT turn over until you are told to do so.
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The population of Numbertown is

End of test

HIGHGATE

Mathematics
11+ Sample Paper A

Read each question carefully before attempting to answer it. Remember to show all your working clearly.

Write your answers in the boxes given.

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The exam will last for approximately 45 minutes.

Question 1

Remember to include your working to show us how you find your answers.

The following questions are about a butcher's shop.

a) Karim buys 7 burgers and 5 steaks.
Burgers cost 61p each and steaks cost 84p each.

How much did Karim spend in total?

7 x 61p = 427p
5 x 84p = 420p
Total = 427 + 420 = 847

Karim spends £ 8.47

b) Sausages come in packs of 8. Each pack costs £1.30

James spends £9.10 on sausages. How many sausages did James get?

9.10 ÷ 1.30 = 7
7 x 8 = 56

James gets 56 sausages.

c) Tyler buys 16 chicken wings, and receives £14.72 change from a £20 note.

What is the price of a chicken wing?

20.00 - 14.72 = 5.28
528 ÷ 16 = 33

One chicken wing costs 33 pence

d) The butcher also sells slices of turkey.

Donald buys three quarters of the slices in the shop. Alisha then buys a sixth of the remaining slices.

Alisha bought 3 slices. How many slices did Donald buy?

3 slices = 1/6th of remaining slices
3 x 6 = 18 slices remaining when Alisha entered shop
18 slices = 1/4 of total number of slices
18 x 3 = 54

Donald bought | 54 | slices

e) Lamb chops are three times more expensive than pork chops.

Tina buys a lamb chop and a pork chop. She spends £4.80 in total.

How much do lamb chops and pork chops cost?

1 lamb chop costs same as 3 pork chops
1 lamb chop + 1 pork chop costs same as 4 pork chops
4.80 ÷ 4 = 1.20
1.20 x 3 = 3.60

A lamb chop costs | £ 3.60 | , a pork chop costs | £ 1.20 |

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Question 2

Remember to include your working to show us how you find your answers.

Mr Green's garden is a mixture of lawn, patio and flower beds. A plan of the garden is shown below, with some (but not all) of the measurements.
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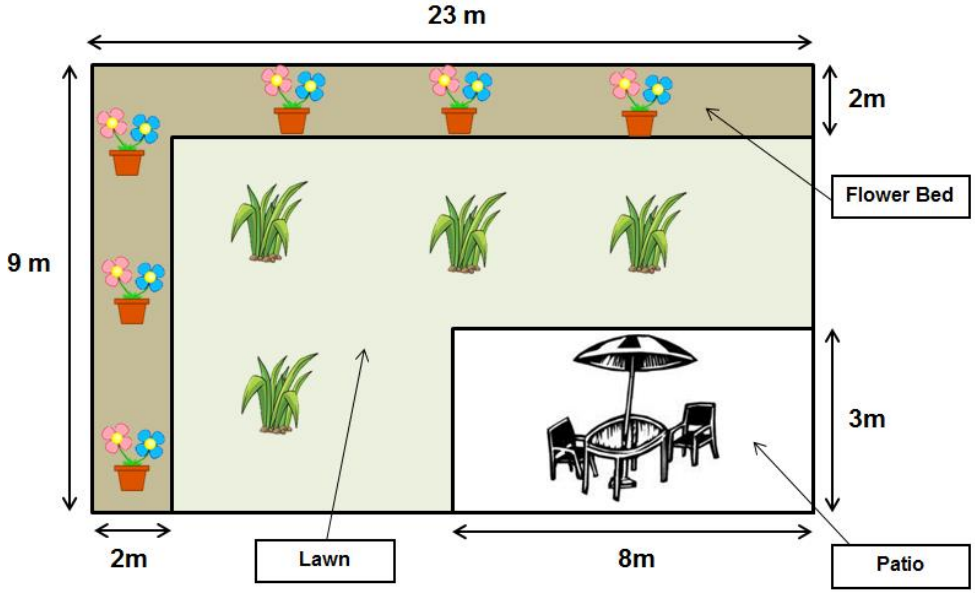

a) What is the area covered by Mr Green's lawn?

Dimensions of lawn (inc. patio) = 21m x 7m
Area of lawn = 21 x 7 - 8 x 3
= 147 - 24
= 123

The area of the lawn is 123 m^2

b) Mr Green buys 6 flower pots. Flower pots cost £4.00 each.
Mr Green has a voucher for "*15% off*".
How much does Mr Green spend on flower pots if he uses the voucher?

Total cost = 4 x 6 = £24
10% of 24 = 2.40
5% of 24 = 1.20
15% of 24 = 3.60
24 - 3.60 = £20.40

Mr Green spends £20.40

c) Mr Green wants to lay paving stones on his patio.
The stones are rectangles measuring 50 cm x 20 cm.

How many paving stones are needed to pave the patio?

800 ÷ 50 = 16
300 ÷ 20 = 15
Total number of tiles = 15 x 16
= 240

The number of paving stones needed is 240

d) The area of the flower bed is 60m^2.

One sack of fertilizer is needed for every 4m^2 of flower bed.

Sacks cost £10 each, but are on offer:
"*buy four sacks and get a fifth sack free*".

How much does it cost to fertilize the flower bed?

60 ÷ 4 = 15 sacks
You pay for 12 sacks, and get 3 free
12 x 10 = £120

The total cost is £120

WAIT: do NOT turn over until you are told to do so.
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Question 3

a) Tim is going paintballing. Entry into paintballing costs £23, but then you also have to pay £6 per 100 paintballs that you use.

Tim spent £65 in total. How many paintballs did he use?

65 - 23 = 42
42 ÷ 6 = 7
7 x 100 = 700

Tim uses [700] paintballs

b) Janice is running a bath. She mixes hot water with cold water to make sure the temperature is just right.

She uses 5 times more hot water than cold water. Janice's bath holds 90 litres of water in total. How much hot water does she use?

There's 1 litre cold for every 5 litres hot
90 ÷ 6 = 15
So there's 15 litres cold

Janice uses [75 litres] of hot water

c) Bob the Builder is filling a hole with a mixture of gravel and sand.

234kg of sand are needed to make 400kg of the mixture.

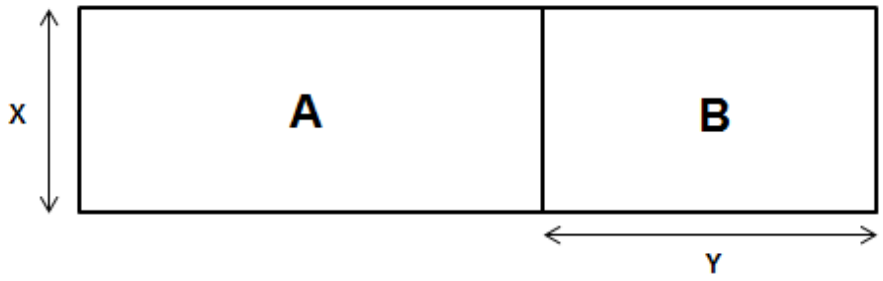
Bob makes 1000kg of the mixture.

How much **gravel** does Bob need?

400 - 234 = 166 kg gravel needed for 400kg of mix
83 kg of gravel needed for 200kg of mix
83 x 5 = 415kg gravel needed for 1000kg of mix

[415 kg]

d) In the picture below, rectangle A has an area of 70cm^2, and rectangle B has an area of 63cm^2. The side lengths of the rectangles are whole numbers. The sides labelled X and Y are both longer than 1cm.



Find the lengths of the sides labelled X and Y.

Possible dimensions of A are: 1 x 70, 2 x 35, 5 x 14, 7 x 10
Possible dimensions of B are: 1 x 63, 3 x 21, 7 x 9
The only possible value for x is 7cm
So y is 9 cm

X is 7cm, and Y is 9cm

e) Victoria the vet is weighing her pets.
Her rabbit and her cat together weigh 10kg.
Her cat and her dog together weigh 24kg.
Her dog and her rabbit together weigh 20kg.

How much do all 3 of her pets weigh when weighed together?

Adding them all together:
2 rabbits + 2 dogs + 2 cats = 10 + 24 + 20 = 54kg
1rabbit + 1 dog +1 cat = 27kg

Together all 3 pets weigh 27 kg

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Question 4

Remember to include your working to show us how you find your answers.

a) In the town of Mathsville there are 360 residents.
45% of the residents are children, the rest are adults.
How many adults are there in Mathsville?

55% are adults
10% of 360 = 36
5% of 360 = 18
50% of 360 = 180
55% of 360 = 198

198 adults

b) Numbertown Primary School has 280 pupils. 56 of these pupils are girls.

What percentage of the pupils are boys?

10% of 280 = 28
20% of 280 = 56
So 20% are girls
So 80% are boys

80%

c) The price of a bus ticket from Mathsville to Numbertown has **increased** by 50% in the past year. A bus ticket now costs £1.80

What did it cost a year ago?

150% = £1.80
50% = 60p
100% = £1.20

A bus ticket cost £1.20 a year ago

d) Mathsville Maths Supplies is a shop selling maths equipment.

Tina bought 4 calculators and 3 protractors for £16.10
Ahmed bought 2 calculators and 1 protractor for £7.50

How much does a calculator cost, and how much does a protractor cost?

4 calculators and 2 protractors costs £7.50 x 2 = £15.00
So 1 protractor costs £16.10 - £15.00 = £1.10
2 calculators costs £7.50 – £1.10 = £6.40
1 calculator costs 6.40 ÷ 2 = £3.20

A calculator costs £ 3.20 , a protractor costs £ 1.10

e) Football is very popular in Numbertown.

Two fifths of the population support London Mathletic.
The rest support either Mathsville United or the Counting Crows.
Twice as many people support Mathsville United than support the Counting Crows.
500 people support the Counting Crows.

What is the total population of Numbertown?

500 x 2 = 1000 people support Counting Crows
1000+500 = 1500 which is three fifths of population
1500 ÷ 3 = 500 which is one fifth
500 x 5 = 2500 people in total

The population of Numbertown is 2500

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End of test

Answer-Key Notes: 11+ Maths Answers (11+ Maths Answers)

Compiled by SATs-Papers.co.uk to help you mark this paper and learn from each answer.

How to use this answer key

This answer key shows both the final answers and the working that led to them, so you can mark not only whether your child got the right result but also whether their method was sound. **Award credit for correct working even if a calculation slip gave the wrong final answer**, and look for patterns: did they misread a question, or do they genuinely not understand fractions, percentages or area?

Use the worked examples below when your child's answer differs from the mark scheme and you want to understand the quickest route to the correct solution. Many questions have more than one valid method; what matters is that the reasoning is logical and the arithmetic is accurate.

If your child scored well but made one or two careless errors, focus on reading questions twice and checking units. If several questions were left blank or the working is confused, revisit the underlying topics before attempting another full paper.

Score interpretation

This paper has 18 parts across four questions, and most parts are worth one or two marks. A score of **14 or above suggests solid readiness** for 11+ maths at selective independent schools, provided the mistakes were minor slips rather than conceptual gaps. Between 10 and 13 indicates reasonable competence but a need to tighten accuracy and revisit one or two weaker areas (often fractions, percentages or multi-step problems).

Scores of 7 to 9 suggest that some core topics have not yet been mastered; look especially at whether your child can handle money arithmetic, work with fractions and interpret worded problems correctly. Below 7 usually means foundational gaps or lack of familiarity with this style of question; more practice with similar multi-step problems and careful revision of the National Curriculum objectives for Year 5 and Year 6 will be needed.

Remember that this is a sample paper designed to familiarise candidates with the format and difficulty. A single score does not define your child's ability; use it to identify which topics need more work, then track progress over several practice papers.

Worked examples

Question 1: Butcher's shop (parts a–e)

Every part here is a real-world problem requiring two or more steps, so marks are lost when students rush and miss one stage (for example, forgetting to convert pence to pounds, or not spotting that 'remaining' means you must first work out what is left). Show all working, label each step clearly and double-check units before writing the final answer.

> **1(d)** : `54 slices`
>
> Alisha bought 3 slices, which was **one sixth of the remaining stock** after Donald had shopped. So 3 × 6 = 18 slices remained. Those 18 slices represent one quarter of the original total (because Donald bought three quarters), so 18 × 4 = 72 slices at the start. Donald bought ¾ of 72, which is 54. The trap is working backwards through two fractions; draw a picture or write each stage in words if that helps.

> **1(e)** : `Lamb chop £3.60, pork chop £1.20`
>
> If a lamb chop costs three times a pork chop, then **buying one of each is the same as buying four pork chops**. Divide £4.80 by 4 to get £1.20 per pork chop, then multiply by 3 for the lamb chop. Many students write 3L + P = 4.80 and try to solve it without realising they can replace L with 3P immediately.

Question 2: Mr Green's garden (parts a–d)

This question mixes area, percentages and problem-solving with offers. **Marks are often lost by misreading the diagram** (for instance, treating the whole 9 m height as lawn when part of it is flower bed) or by forgetting that 'buy four, get one free' means you need five to get one free, not four. Always re-check what the question is asking for: sometimes it is area, sometimes it is a count of objects, sometimes it is money after a discount.

> **2(a)** : `123 m²`
>
> The lawn plus patio together form a 21 m × 7 m rectangle (because the garden is 23 m wide minus the 2 m flower-bed strip on the left). That gives 147 m². **Subtract the 8 m × 3 m patio** (24 m²) to leave 123 m² of lawn. A common mistake is to forget the patio or to use the wrong dimensions.

2(d) : `£120`

60 m² ÷ 4 m² per sack = 15 sacks needed. The offer is '**buy four, get a fifth free**', so every five sacks cost the price of four. 15 sacks = three lots of five, meaning you pay for 3 × 4 = 12 sacks at £10 each, which is £120. Students often divide 15 by 5 to get 3 and mistakenly think they pay for only 3 sacks.

Question 3: Mixed problems (parts a–e)

These are classic multi-step problems: **read carefully to identify what you know and what you need to find**, then work through one step at a time. Part (d) requires listing factor pairs and spotting a shared dimension; part (e) is a simultaneous-equations problem that can be solved by adding all three statements. Both are harder than they first appear, so if your child left them blank that is not unusual.

3(d) : `X is 7 cm, Y is 9 cm`

Rectangle A has area 70 cm², so its factor pairs (both greater than 1) are 2×35, 5×14 and 7×10. Rectangle B has area 63 cm², giving pairs 3×21 and 7×9 (ignoring 1×63). **The shared height X must appear in both lists**, so X = 7 cm. Then A is 7 × 10 and B is 7 × 9, making Y = 10 + 9 = 19 cm along the bottom—except the mark scheme shows Y is the width of B alone, so Y = 9 cm. (If your diagram shows Y spanning both rectangles, re-check the labels.)

3(e) : `27 kg`

Write R + C = 10, C + D = 24, D + R = 20. **Add all three equations**: 2R + 2C + 2D = 54, so R + C + D = 27 kg. This is quicker than solving for each animal individually. Students who try to find R, C and D separately often get stuck because there are three unknowns and only three equations.

Question 4: Percentages and algebra (parts a–e)

Percentage problems here range from straightforward (finding 55% of 360) to reverse percentages (working out the original price before a 50% increase) and problem-solving with ratios. **Show every percentage calculation as a separate line**: find 10%, then build up 5%, 15% or whatever is needed. In part (d) you are solving two equations in two unknowns; the mark scheme doubles Ahmed's purchase to eliminate the protractor, which is the neatest method.

4(c) : `£1.20`

The ticket now costs £1.80, which is **150% of the original price** (100% + 50% increase). So 150% = £1.80 means 50% = £0.60 and 100% = £1.20. Many students subtract 50% of £1.80 from £1.80, giving £0.90, which is wrong because the 50% increase was calculated on the smaller original amount, not on the current price.

4(e) : `2500`

500 people support Counting Crows, so **1000 support Mathsville United** (twice as many). That leaves 500 + 1000 = 1500 supporting those two clubs, which is three fifths of the population (because two fifths support London Mathletic). So one fifth = 1500 ÷ 3 = 500, and the whole population is 500 × 5 = 2500. Draw a bar model if fractions are confusing.

Next steps

After marking, sit down with your child and **review every incorrect or blank answer together**. Ask them to explain what they were thinking: often they misread the question or knew the method but made an arithmetic slip. If the same type of mistake appears in several places (for example, always getting percentage decreases wrong, or always forgetting to convert units), that topic needs focused revision before the next practice paper.

If your child scored well, challenge them with harder multi-step problems or past papers from highly selective schools; if they struggled, go back to topic-by-approach workbooks (for instance, CGP or Bond guides on fractions, percentages and problem-solving) and ensure they can do single-step examples confidently before returning to full timed papers. Either way, keep practice regular but not excessive: two or three focused sessions per week will achieve more than daily cramming.
