

Answers and Worked Solutions

P5 Maths: Free Sample · 29 marks

Q	Question type	Answer	Marks
Q1	Order of operations	(3) 45	2
Q2	Converting measurements with decimals	(2) 3.045 km	2
Q3	Fraction of a quantity, with units	750 g	2
Q4	Percentage in daily life: GST, discount, interest	\$87.20	2
Q5	Rate: two working together	20 min	4
Q6	Fraction of a remainder	\$210	4
Q7	Volume of water in a tank	22.5 l	4
Q8	Assumption method: two kinds	13 adults	4
Q9	Moving items: total unchanged	360 marbles	5

How to mark

- Q1 to Q4: full marks for the correct answer.
- Q5 to Q9: a correct final answer earns full marks. If the final answer is wrong, give the step marks shown for each correct step.
- Equivalent working is accepted.

Q1
Paper 1 Order of operations

[2 marks]

 What is the value of $75 - 6 \times (13 - 5) + 18$?

Answer: (3) 45

Worked solution

1. Brackets first: $13 - 5 = 8$.
2. Then multiply: $6 \times 8 = 48$.
3. Then subtract and add from left to right: $75 - 48 + 18 = 27 + 18 = 45$.
4. Remember BODMAS: Brackets, Orders (powers), Division and Multiplication (left to right), Addition and Subtraction (left to right). Division and multiplication have equal priority, so work from left to right; the same goes for addition and subtraction.

Common mistakes

- **Option (1):** After multiplying, work from left to right: $75 - 48 = 27$, then $+ 18$. You added 48 and 18 first.

- **Option (2):** The brackets must be worked out first: $13 - 5 = 8$. Then $6 \times 8 = 48$.
- **Option (4):** You did $75 - 6$ first. Multiplication comes before subtraction: brackets first ($13 - 5 = 8$), then $6 \times 8 = 48$.

Q2**Paper 1** Converting measurements with decimals**[2 marks]**

The distance from Sam's home to the stadium is 3 km 45 m. Express this in kilometres.

Answer: (2) 3.045 km

Worked solution

1. 1 km = 1000 m, so 45 m = $45 \div 1000$ km = 0.045 km.
2. 3 km 45 m = $3 + 0.045 = 3.045$ km.

Common mistakes

- **Option (1):** 1 km = 1000 m, so divide 45 by 1000 (move the digits 3 places), not by 10000. 45 m = 0.045 km.
- **Option (3):** You wrote 45 m as 0.45 km. But 1 km = 1000 m, so 45 m = $45 \div 1000 = 0.045$ km. Watch the zero after the decimal point.
- **Option (4):** 3 km 45 m = 3,045 m. To change metres into kilometres, divide by 1000, not by 100.

Q3**Paper 1** Fraction of a quantity, with units**[2 marks]**

Mdm Siti bought a 2 kg bag of flour. She used $\frac{3}{8}$ of it to bake bread. How many grams of flour did she use?

Answer: 750 g

Worked solution

1. 2 kg = 2×1000 g = 2,000 g.
2. $\frac{3}{8}$ of 2,000 g = $2,000 \div 8 \times 3 = 750$ g.

Common mistakes

- **Answer 1,250:** 1,250 g is $\frac{5}{8}$ of the whole. The question asks for $\frac{3}{8}$.
- **Answer 250:** 250 g is $\frac{1}{8}$ of the whole. You need $\frac{3}{8}$: multiply by 3.
- **Answer 75:** 1 kg = 1000 g, not 100. So 2 kg = 2,000 g.
- **Answer 2,000:** 2,000 g is the whole. Now find $\frac{3}{8}$ of it.

Q4**Paper 1** Percentage in daily life: GST, discount, interest**[2 marks]**

A watch costs \$80 before GST. GST of 9% is charged on the price. How much does the watch cost after GST?

Answer: \$87.20

Worked solution

1. GST = 9% of \$80 = $\frac{9}{100} \times \$80 = \$7.20$.
2. Price after GST = \$80 + \$7.20 = \$87.20.
3. Another way: 109% of \$80 = \$87.20.

Common mistakes

- **Answer \$7.20:** \$7.20 is the GST. Add it to \$80.
- **Answer \$89.00:** 9% is not \$9. 9% of \$80 = $\frac{9}{100} \times \$80 = \$7.20$.
- **Answer \$72.80:** The GST is ADDED, so the amount goes up: \$80 + \$7.20.

Q5

Paper 2 Rate: two working together

[4 marks]

Printer A prints 45 pages in 3 minutes. Printer B prints 8 more pages per minute than Printer A. Both printers are used together to print 760 pages. How many minutes will they take?

Answer: 20 min

Worked solution

1. Printer A: $45 \div 3 = 15$ pages per minute. [1 mark]
2. Printer B: $15 + 8 = 23$ pages per minute. Together: $15 + 23 = 38$ pages per minute. [1 mark]
3. Time taken = $760 \div 38 = 20$ minutes. [2 marks]
4. Check: in 20 minutes, $38 \times 20 = 760$ pages.

Common mistakes

- **Step 1 answer 45:** 45 pages is for 3 minutes. For 1 minute, divide by 3.
- **Step 1 answer 135:** To find the amount in 1 minute, DIVIDE: $45 \div 3$.
- **Step 2 answer 23:** 23 pages per minute is Printer B alone. Add Printer A (15) to it.
- **Step 2 answer 68:** 45 pages is what Printer A does in 3 minutes. In 1 minute it does $45 \div 3 = 15$. Together: $15 + 23$.
- **Final answer 28,880:** Time = total amount $\div$ amount in 1 minute = $760 \div 38$.

Q6

Paper 2 Fraction of a remainder

[4 marks]

Mrs Lee had some money. She spent $\frac{1}{3}$ of it on a bag and $\frac{2}{5}$ of the remaining money on a pair of shoes. She had \$84 left. How much money did she have at first?

Answer: \$210

Worked solution

1. Remainder after the bag part = $1 - \frac{1}{3} = \frac{2}{3}$. The shoes part = $\frac{2}{5} \times \frac{2}{3} = \frac{4}{15}$ of her money. [1 mark]
2. Left = $1 - \frac{1}{3} - \frac{4}{15} = \frac{2}{5}$. [1 mark]
3. $\frac{2}{5}$ of her money = \$84, so the whole = $84 \div \frac{2}{5} = \$210$. [2 marks]
4. Check: bag \$70, remainder \$140, shoes \$56, left \$84.



Common mistakes

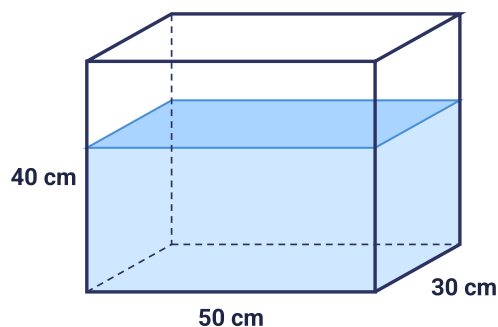
- **Step 1 answer 2/5:** $\frac{2}{5}$ is a fraction of the REMAINING part, not of her money. The remainder is $1 - \frac{1}{3} = \frac{2}{3}$, so the shoes part is $\frac{2}{5} \times \frac{2}{3}$.
- **Step 1 answer 2/15:** Multiply by the REMAINDER ($\frac{2}{3}$), not by $\frac{1}{3}$.
- **Step 1 answer 2/3:** $\frac{2}{3}$ is what was left after the bag part. Now take $\frac{2}{5}$ of it.
- **Step 2 answer 4/15:** The shoes part is $\frac{4}{15}$ of her money, not $\frac{2}{5}$. Left = $1 - \frac{1}{3} - \frac{4}{15}$.
- **Step 2 answer 11/15:** Take away BOTH parts: $1 - \frac{1}{3} - \frac{4}{15}$.
- **Final answer 315:** $\frac{2}{5}$ is a fraction of the remainder, not of her money. The known amount is $\frac{2}{5}$ of her money.
- **Final answer 84:** 84 is only $\frac{2}{5}$ of her money. Use it to find the whole.
- **Final answer 140:** 140 is what was left after the bag part.

Q7

Paper 2 Volume of water in a tank

[4 marks]

A rectangular fish tank measures 50 cm by 30 cm by 40 cm. It contains water to a height of 25 cm. How many more litres of water are needed to fill the fish tank completely? (1 ℓ = 1000 cm³)



The figure is not drawn to scale.

Answer: 22.5 ℓ

Worked solution

1. Capacity = $50 \times 30 \times 40 = 60,000 \text{ cm}^3$. [1 mark]
2. Water now = $50 \times 30 \times 25 = 37,500 \text{ cm}^3$. [1 mark]
3. Water needed = $60,000 - 37,500 = 22,500 \text{ cm}^3 = 22,500 \div 1000 = 22.5 \text{ ℓ}$. [2 marks]

Common mistakes

- **Step 1 answer 120:** Volume = length $\times$ breadth $\times$ height, not their sum.
- **Step 1 answer 1,500:** 1,500 cm² is the base area. Multiply by the height (40 cm) too.

- **Step 2 answer 22,500:** The WATER is 25 cm high, so its volume is $50 \times 30 \times 25$.
- **Step 2 answer 60,000:** Use the height of the water (25 cm), not of the fish tank.
- **Final answer 22,500:** 22,500 is in cm^3 . $1 \ell = 1000 \text{ cm}^3$, so divide by 1000.
- **Final answer 225:** $1 \ell = 1000 \text{ cm}^3$, not 100 cm^3 .
- **Final answer 60:** Some water is already in the fish tank. Subtract it: $60,000 - 37,500$.
- **Final answer 37.5:** That is the water already there. Find how much more is needed.

Q8**Paper 2** Assumption method: two kinds**[4 marks]**

At a zoo, an adult ticket costs \$12 and a child ticket costs \$7. A group of 30 adults and children paid \$275 for their tickets. How many adults were there in the group?

Answer: 13 adults**Worked solution**

1. Suppose all 30 were child tickets: $30 \times \$7 = \$210$. [1 mark]
2. Difference = $\$275 - \$210 = \$65$. [1 mark]
3. Each child ticket changed to an adult ticket adds $\$12 - \$7 = \$5$. Number of adults = $\$65 \div \$5 = 13$. [2 marks]
4. Check: $13 \times \$12 + 17 \times \$7 = \$275$.

Common mistakes

- **Step 1 answer 360:** The step asks you to suppose they are ALL child tickets. That gives $30 \times \$7$.
- **Step 1 answer 275:** \$275 is the real total. Suppose they are all child tickets first: $30 \times \$7$.
- **Step 2 answer 210:** Now compare it with the real total: $\$275 - \$210$.
- **Step 2 answer 275:** Subtract the supposed total (\$210) from it.
- **Step 2 answer 485:** Find the DIFFERENCE: $\$275 - \$210$.
- **Final answer 17:** 17 is the number of children. The question asks for the adults.
- **Final answer 65:** Now divide the difference by \$5, the extra for each adult ticket.

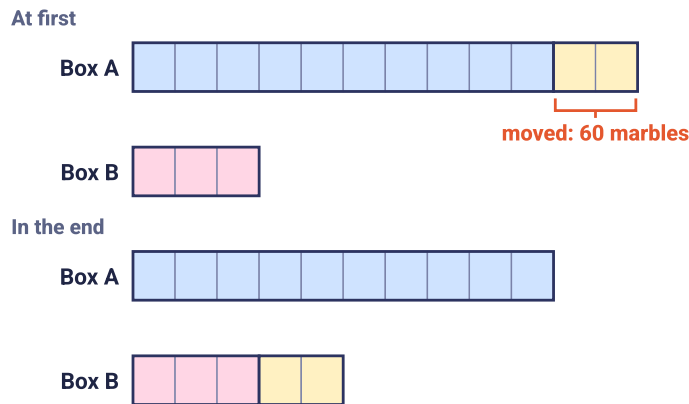
Q9**Challenge** Moving items: total unchanged**[5 marks]**

Box A had 4 times as many marbles as Box B. After 60 marbles were moved from Box A to Box B, Box A had 2 times as many marbles as Box B. How many marbles were in Box A at first?

Answer: 360 marbles**Worked solution**

1. The total does not change. At first, Box A has 4 units for every 1 unit of Box B, so Box A has $\frac{4}{5}$ of the total. [1 mark]
2. In the end, Box A has 2 units for every 1 unit of Box B, so Box A has $\frac{2}{3}$ of the total. [1 mark]

3. Box A's share went down by $\frac{4}{5} - \frac{2}{3} = \frac{2}{15}$ of the total, which is the 60 marbles moved. Total
 $= 60 \text{ marbles} \div \frac{2}{15} = 450 \text{ marbles}$. [1 mark]
4. Box A at first $= \frac{4}{5} \times 450 = 360 \text{ marbles}$. [2 marks]
5. Units method: make the total 15 units. Box A goes from 12 units to 10 units, so 2 units = 60 marbles and 1 unit = 30 marbles.
6. Check: at first 360 marbles and 90 marbles; in the end 300 marbles and 150 marbles.



Common mistakes

- **Step 1 answer 1/5:** That is Box B's share. Box A has 4 units and Box B has 1 unit, so Box A has $\frac{4}{5}$ of the total.
- **Step 1 answer 1/4:** "4 times as many" means Box A has 4 units for every 1 unit of Box B. The total is 5 units.
- **Step 1 answer 3/4:** The total is $4 + 1 = 5$ units.
- **Step 2 answer 1/3:** That is Box B's share in the end. In the end Box A has 2 units for every 1 unit of Box B, so Box A has $\frac{2}{3}$ of the total.
- **Step 2 answer 1/2:** In the end Box A has 2 units for every 1 unit of Box B, so Box A has $\frac{2}{3}$ of the total.
- **Step 3 answer 300:** 60 marbles is not 1 unit. It is the change in Box A's share: $\frac{4}{5} - \frac{2}{3} = \frac{2}{15}$ of the total.
- **Step 3 answer 180:** 60 marbles is $\frac{2}{15}$ of the total.
- **Step 3 answer 360:** That is Box A's share at first. The total is $60 \text{ marbles} \div \frac{2}{15}$.
- **Step 3 answer 75:** 60 marbles is the CHANGE in Box A's share, $\frac{4}{5} - \frac{2}{3} = \frac{2}{15}$ of the total.
- **Final answer 90:** The question asks about Box A. Box A at first $= \frac{4}{5}$ of 450 marbles.
- **Final answer 300:** That is Box A AFTER the move. Add back the 60 marbles moved.
- **Final answer 450:** Now find $\frac{4}{5}$ of the total.
- **Final answer 240:** 60 marbles is $\frac{2}{15}$ of the total, not 1 unit.

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