

Reasoning and Problem Solving – Multi-step Problems 2

National Curriculum Objectives:

Mathematics Year 5: [Solve addition and subtraction multi-step problems in context, deciding which operations and methods to use and why](#)

Differentiation:

Developing Solving multi-step addition and subtraction problems involving 2-digit multiples of 5 and 10.

Secure Solving multi-step addition and subtraction problems involving 3-digit multiples of 5 and 10.

Mastery Solving multi-step addition and subtraction problems involving any 4-digit number and mixed units of measure.

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Reasoning and Problem Solving – Multi-step Problems – Teaching Information

1. Jenna walks 15 metres to school on Monday. She walks a further 15 metres on Tuesday and another 15 metres on Wednesday. How far has she walked in total?

How many calculations do you have to do?
Is there a more effective way of doing it?

2. On Monday, Sam put £30 in his money box. On Tuesday, he put in £5 more than on Monday. On the Wednesday he put in £5 less than on Monday. How much does Sam now have in his money box?

How many calculations do you have to do?
Is there a more effective way of doing it?

3. Kelly plays outside for 55 minutes. She spends 20 minutes playing on the swing, 20 minutes playing with the dog and the rest of the time kicking a ball. How long did she spend kicking a ball?

How many calculations do you have to do?
Is there a more effective way of doing it?

4. In the cake sale, cookies were 10p, cupcakes were 20p and flapjacks were 15p. Omar bought 3 cookies, 2 cupcakes and 2 flapjacks. How much did he spend?

How many calculations do you have to do?
Is there a more effective way of doing it?

5. Josie collects 160 stickers on Monday, a further 160 stickers on Tuesday and another 160 stickers on Wednesday. On Thursday, she gives 50 stickers away. How many stickers does she now have?

How many calculations do you have to do?
Is there a more effective way of doing it?

6. On Wednesday, Ashkay is paid £140. On Thursday, he is paid £37 more than on Wednesday. On Friday he is paid £37 less than on Wednesday. How much has Ashkay been paid in total?

How many calculations do you have to do?
Is there a more effective way of doing it?

7. Kesha visits her gran for 225 minutes. She spends 45 minutes chatting, 55 minutes helping her complete a jigsaw, 25 minutes reading and the rest of the time baking. How long does she spend baking?

How many calculations do you have to do?
Is there a more effective way of doing it?

8. At the toy shop, Lego sets are 230p, skates are 145p and balls are 150p. Chin bought 2 Lego sets, 2 pairs of skates and 2 balls. How much did he spend?

How many calculations do you have to do?
Is there a more effective way of doing it?

9. Jessie wants to buy a gift for her mum but it costs £180.50. In August, she saves £56. In September, she saves another £56 and in October, she saves another £56. How much more money does she need?

How many calculations do you have to do?
Is there a more effective way of doing it?

10. 5,345 fans turn up at the match. 1,467 fans have a season ticket, 2,490 fans bought their ticket online. 1,345 fans buy a ticket at the gate. How many fans still need to buy a ticket?

How many calculations do you have to do?
Is there a more effective way of doing it?

11. A plane travels 2,356 miles on Monday. It repeats the same journey over the next 4 days. On Saturday and Sunday, it flies 1,245 miles each day. How many miles has the plane flown?

How many calculations do you have to do?
Is there a more effective way of doing it?

12. Jax buys 3 bottles of pop at £1.56 each, 3 bags of chips at £1.70 each, 3 jumbo sausages at 85p each and 3 pineapple fritters at £1.99 each. How much change does he get back from a £20 note?

How many calculations do you have to do?
Is there a more effective way of doing it?

Developing

1. Children may choose to do $15 + 15 + 15 = 45$, when $15 \times 3 = 45$ may be the quickest solution.
2. Children may choose to do $£30 + £35 + £25 = £90$, without realising the addition and subtraction of the £5 cancel each other out, so they could just do $£30 \times 3 = £90$.
3. Children may choose to do $55 - 20 = 35$, then $35 - 20 = 15$. Or they could mentally double the 20 and do $55 - 40 = 15$.
4. Children may choose to do $10p + 10p + 10p = 30p$, then $20p + 20p = 40p$, then $15p + 15p = 30p$, then $30p + 40p + 30p = 100p$. Children could be encouraged to multiply the amounts first before adding them together e.g. $10p \times 3p = 30p$

Secure

5. Children may choose to do $160 + 160 = 320$, then $320 + 160 = 480$, then $480 - 50 = 430$. It may be more efficient to do $160 \times 3 = 480$, then $480 - 50 = 430$.
6. Children may choose to do $£140 + £177 + £103 = £420$, without realising the addition and subtraction of the 37 cancel each other out, so they could just do $£140 \times 3 = £420$.
7. Children may choose to do $225 - 45 = 180$, $180 - 55 = 130$, $130 - 25 = 105$, or they might use number bond facts and do $45 + 55 + 25 = 125$, then $225 - 125 = 100$.
8. Children may choose to do $230p + 230p = 460p$, $145p + 145p = 290p$, $150p + 150p = 300p$, then $460p + 290p + 300p = 1050p$. It may be quicker to add $230p$, $125p$ and $150p$ then multiply by 2.

Mastery

9. Children may choose to do $£56 + £56 + £56 = £168$, then $£180.50 - £168 = £12.50$. It may be quicker to do $£56 \times 3$.
10. Children may choose to do $5,345 - 1,467 = 3,878$, then $3,878 - 2,490 = 1,388$, then $1,388 - 1,345 = 43$. It may be more efficient to do $1,467 + 2,490 + 1,345 = 5,302$, then $5,345 - 5,302 = 43$.
11. Children may do $2,356 + 2,356 + 2,356 + 2,356 + 2,356 + 1,245 + 1,245 = 14,270$. Children may realise that it's quicker to do $2,356 \times 5$ added to $1,245 \times 2$.
12. Children may choose to add each of the items individually e.g. $£1.56 + £1.56 + £1.56$ etc. It may prove quicker to do $£1.56 + £1.70 + 85p + £1.99 = £6.10$, then $£6.10 \times 3 = £18.30$, then $£20 - £18.30 = £1.70$.