

Reasoning and Problem Solving

Step 5: Four Operations with Lengths

National Curriculum Objectives:

Mathematics Year 2: (2M1) [Compare and order lengths, mass, volume/capacity and record the results using >, < and =](#)

Mathematics Year 2: (2M2) [Choose and use appropriate standard units to estimate and measure length/height in any direction \(m/cm\); mass \(kg/g\); temperature \(° C\); capacity \(litres/ml\) to the nearest appropriate unit using rulers, scales, thermometers and measuring vessels](#)

Differentiation:

Questions 1, 4 and 7 (Problem Solving)

Developing Complete the calculation using add, subtract, double, half; same measures only.

Expected Complete the calculation using add, subtract, multiply & divide by 2, 5, 10; same measures only.

Greater Depth Complete the calculation using add, subtract, multiply & divide by 2, 5, 10; mixed measures (m and cm).

Questions 2, 5 and 8 (Reasoning)

Developing Identify if the child is correct by using add, subtract, double, half; same measures only.

Expected Identify if the child is correct by using add, subtract, multiply & divide by 2, 5, 10; same measures only.

Greater Depth Identify if the child is correct using add, subtract, multiply & divide by 2, 5, 10; mixed measures (m and cm).

Questions 3, 6 and 9 (Problem Solving)

Developing Use either add, subtract, double, half; same measures only to complete the word problem.

Expected Use either add, subtract, multiply & divide by 2, 5, 10; same measures only to complete the word problem.

Greater Depth Use either add, subtract, multiply & divide by 2, 5, 10; mixed measures (m and cm) to complete the word problem.

More [Year 2 Length and Height](#) resources.

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Four Operations with Lengths

Four Operations with Lengths

1a. Buddy and Bob are making ladders out of straws. Buddy's ladder is 30cm long. Bob's ladder is longer than Buddy's.

When added together, their ladders measure 70cm long.

How long is Bob's ladder?



PS

1b. Ezra and Bea are building with wooden train tracks. Ezra's track is 20cm long. Bea's track is shorter than Ezra's.

When added together, their train tracks measure 30cm long.

How long is Bea's train track?



PS

2a. Is Kai correct? Explain why.



I have a piece of ribbon that is 10cm long. Ivy's ribbon is double the size of mine. Together our ribbons are 30cm long.



R

2b. Is Eve correct? Explain why.



I have a piece of cord that is 20cm long. Lee's cord is half the size of mine. Together our pieces of cord are 10cm long.



R

3a. Orla is building towers using sixty 1cm cubes.

Her first tower is 20cm tall.

Her second tower is double the height of the first tower.

How tall is the second tower?

How many cubes does she have left?



PS

3b. Jed is building towers using thirty 1cm cubes.

His first tower is 10cm tall.

His second tower uses 9 more cubes than his first tower.

How tall is the second tower?

How many cubes does he have left?



PS

Four Operations with Lengths

4a. Nancy and Joy are making beaded bracelets. Nancy's bracelet is 25cm long. Joy's bracelet is shorter than Nancy's.

When added together, their bracelets measure between 41cm and 44cm long.

How long could Joy's bracelet be?



PS

Four Operations with Lengths

4b. Saffie and Ali are lining up toy cars. Saffie's line is 15cm long. Ali's line is longer than Saffie's.

When added together, their lines of toy cars measure between 51cm and 54cm.

How long could Ali's line of toy cars be?



PS

5a. Is Mya correct? Explain why.



I have a piece of rope that is 30cm long. Tim's rope is 10 times shorter than mine. Together our ropes are 40cm long.



R

5b. Is Joe correct? Explain why.



I have a piece of string that is 40cm long. Ava's string is 5 times shorter than mine. Together our pieces of string are 48cm long.



R

6a. Niko is building towers using thirty 1cm cubes.

His first tower is 18cm tall.

His second tower is half the size of the first tower

How tall is the second tower?

How many cubes does he have left?



PS

6b. Callie is building towers using twenty 1cm cubes.

Her first tower is 6cm tall.

Her second tower uses double the amount of cubes used in her first tower.

How tall is the second tower?

How many cubes does she have left?



PS

Four Operations with Lengths

7a. Tia and Abe are making a bridge out of wooden planks. Tia's bridge is 5m long. Abe's bridge is shorter than Tia's.

When added together, their bridges measure 700cm long.

How long is Abe's bridge in m?



PS

Four Operations with Lengths

7b. Amby and Una are building a wooden train track. Amby's track is 200cm long. Una's track is longer than Amby's.

When added together, their tracks measure 8m long.

How long is Una's train track in cm?



PS

8a. Is Jack correct? Explain why.



I have a piece of rope that is 3m long. Becky's rope is 5 times longer than mine. Together our ropes are 150cm long.



R

8b. Is Susie correct? Explain why.



I have a piece of string that is 2m long. Ada's string is 5 times longer than mine. Together our pieces of string are 120cm long.



R

9a. Rex is building towers using 1cm cubes.

His first tower is 1m tall.

His second tower is double the size of his first tower.

How tall are the two towers altogether?

How many cubes did he use in the first tower?



PS

9b. Alf is building towers using 1cm cubes.

His first tower is 1m tall.

His second tower is 5 times bigger.

How tall are the two towers altogether?

How many cubes did he use in the first tower?



PS

Reasoning and Problem Solving Four Operations with Lengths

Developing

1a. 40cm

2a. Kai is correct.

Double 10 = 20. $10\text{cm} + 20\text{cm} = 30\text{cm}$.

3a. The second tower is 40cm.

There are 0 cubes left.

Expected

4a. Various possible answers;

16, 17, 18 or 19.

5a. Mya is incorrect. The answer is 33cm.

$30 \div 10 = 3$ and $30 + 3 = 33$.

6a. The second tower is 9cm.

There are 3 cubes left.

Greater Depth

7a. 2m

8a. Jack is incorrect. The answer is 18m.

$3 \times 5 = 15$ and $15 + 3 = 18\text{m}$. 18m in cm = 1,800cm.

9a. Altogether the two towers measure 3m. He used 100 cubes in the first tower.

Reasoning and Problem Solving Four Operations with Lengths

Developing

1b. 10cm

2b. Eve is incorrect.

Half of 20 = 10 and $20 + 10 = 30\text{cm}$.

3b. The second tower is 19cm.

There is 1 cube left.

Expected

4b. Various possible answers;

36, 37, 38 or 39.

5b. Joe is correct.

$40 \div 5 = 8$ and $40 + 8 = 48$.

6b. The second tower is 12cm.

There are 2 cubes left.

Greater Depth

7b. 600cm

8b. Susie is incorrect.

2m multiplied by 5 = 10m. $10\text{m} + 2\text{m} = 12\text{m}$. 12m in cm = 1,200cm.

9b. Altogether the two towers measure 6m. He used 100 cubes in the first tower.