

Reasoning and Problem Solving

Step 3: Estimate and Approximate

National Curriculum Objectives:

Mathematics Year 5: (5C3) [Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy](#)

Differentiation:

Questions 1, 4 and 7 (Reasoning)

Developing Use an approximation to explain whether the given answer to a calculation is likely to be correct. Using up to and including 4-digit numbers, rounding to the nearest 10, 100 or 1,000.

Expected Use an approximation to explain whether the given answer to a calculation is likely to be correct. Using up to and including 5-digit numbers, rounding to the nearest 10, 100, 1,000 or 10,000.

Greater Depth Use an approximation to explain whether the given answer to a calculation is likely to be correct. Using up to and including 5-digit numbers, rounding to the nearest 10, 100, 1,000 or 10,000. Numbers are used within the context of lengths.

Questions 2, 5 and 8 (Problem Solving)

Developing Calculate an approximate answer in order to find how many lots of a certain amount are required to cover a total. Using up to and including 4-digit numbers, rounding to the nearest 100 or 1,000. Rounding whole numbers only.

Expected Calculate an approximate answer in order to find how many lots of a certain amount are required to cover a total. Using up to and including 5-digit numbers, rounding to the nearest 1,000. Rounding whole numbers; also rounding numbers with 2 decimal places (to the nearest whole) in the context of money.

Greater Depth Calculate an approximate answer in order to find how many lots of a certain amount are required to cover a total. Using up to and including 5-digit numbers, rounding to the nearest 1,000. Rounding whole numbers and numbers with 2 decimal places (to the nearest whole), all within the contexts of money and lengths.

Questions 3, 6 and 9 (Reasoning)

Developing Prove whether the given approximation in a word problem is correct. Using up to and including 4-digit numbers, rounding to the nearest 10 or 1,000. Rounding whole numbers only.

Expected Prove whether the given approximation in a word problem is correct. Using up to and including 5-digit numbers, rounding to the nearest 10,000. Rounding whole numbers; also rounding numbers with 2 decimal places (to the nearest whole) in the context of money.

Greater Depth Prove whether the given approximation in a word problem is correct. Using up to and including 5-digit numbers, rounding to the nearest 10,000. Rounding whole numbers and numbers with 2 decimal places (to the nearest whole), all within the contexts of money and lengths.

More Year 5 [Addition and Subtraction](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

Estimate and Approximate

Estimate and Approximate

1a. Taron has answered the following calculation:

$$1,214 + 483 = 1,617$$

Use an approximate calculation to explain whether Taron's answer is likely to be correct.



R

1b. Rachel has answered the following calculation:

$$3,857 - 1,743 = 2,314$$

Use an approximate calculation to explain whether Rachel's answer is likely to be correct.



R

2a. Kiera has been given the numbers below:

2,374

4,306

914

She wants to show the approximate total of the three numbers using place value counters, but she only has thousands counters.

How many thousands counters will she need?



PS

2b. Cole has been given the numbers below:

284

1,459

515

He wants to show the approximate total of the three numbers using place value counters, but he only has hundreds counters.

How many hundreds counters will he need?



PS

3a. Ibrahim wants to give away 73 of his building bricks.

He has 200 bricks in his collection.

He estimates he will have 130 bricks left after he has given the bricks away.

Is Ibrahim's estimation correct? Prove it.



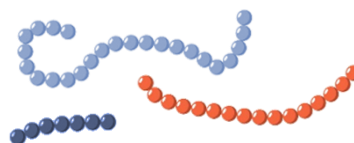
R

3b. Sonya wants to collect 1,856 more beads.

She has 2,000 beads in her collection.

She estimates she will have 3,000 beads after she has collected her new beads.

Is Sonya's estimation correct? Prove it.



R

Estimate and Approximate

Estimate and Approximate

4a. Rocco has answered the following calculation:

$$43,795 - 17,489 = 35,842$$

Use an approximate calculation to explain whether Rocco's answer is likely to be correct.



R

4b. Emily has answered the following calculation:

$$30,239 + 7,122 = 37,361$$

Use an approximate calculation to explain whether Emily's answer is likely to be correct.



R

5a. Shuri has been given the numbers below:

774

19,035

2,912

She wants to show the approximate total of the three numbers using place value counters, but she only has thousands counters.

How many thousands counters will she need?



PS

5b. Luke has been given the amounts below:

£6.85

£55.94

£21.41

He wants to show the approximate total of the three amounts using real money, but he only has one pound coins.

How many one pound coins will he need?



PS

6a. Jackson wants to buy a basketball. It costs £14.79.

He has £70 in his bank account.

He estimates he will have £45 left after he has bought the ball.

Is Jackson's estimation correct? Prove it.



R

6b. Esther wants to buy a character in her computer game. It costs 17,750 credits.

She has 80,000 credits in the game.

She estimates she will have 60,000 credits left after she has bought the character.

Is Esther's estimation correct? Prove it.



R

Estimate and Approximate

Estimate and Approximate

7a. Sean has answered the following calculation:

$$28,034\text{m} + 8\frac{1}{4}\text{ km} = 36,284\text{m}$$

Use an approximate calculation to explain whether Sean's answer is likely to be correct.



R

7b. Seren has answered the following calculation:

$$53,493\text{m} - 9\frac{3}{4}\text{ km} = 49,919\text{m}$$

Use an approximate calculation to explain whether Seren's answer is likely to be correct.



R

8a. Isla has been given the amounts below:

1,288p

4,846p

£329.74

She wants to show the approximate total of the three amounts using real money, but she only has one pound coins.

How many one pound coins will she need?



PS

8b. Omri has been given the lengths below:

11,209cm

$7\frac{1}{2}\text{ m}$

5,247cm

He wants to show the approximate total of the three numbers using pieces of rope, but he only has ropes which are 1,000cm long.

How many 1,000cm pieces of rope will he need?



PS

9a. Max has to put up $9\frac{3}{4}\text{ km}$ of telephone wires.

He has 20,000m of wire.

He estimates he will have 10,000m of wire left after doing the job.

Is Max's estimation correct? Prove it.



R

9b. Olivia wants to buy a tree house. It costs £244.89.

She has £290 in her bank account.

She estimates she will have 3,500p left after she has bought the tree house.

Is Olivia's estimation correct? Prove it.



R

Reasoning and Problem Solving Estimate and Approximate

Developing

1a. Various answers (depending on what the children choose to round to), for example: Taron's answer is likely to be incorrect because (when rounding to the nearest 100) an approximate answer to the calculation is $1,200 + 500 = 1,700$, but Taron's answer would round to 1,600.

2a. 7 counters.

3a. Ibrahim is correct because 73 rounds down to 70. $200 - 70 = 130$.

Expected

4a. Various answers (depending on what the children choose to round to), for example: Rocco's answer is likely to be incorrect because (when rounding to the nearest 1,000) an approximate answer to the calculation is $44,000 - 17,000 = 27,000$, but Rocco's answer would round to 36,000.

5a. 23 counters.

6a. Jackson is incorrect because £14.79 rounds up to £15. $£70 - £15 = £55$, not £45.

Greater Depth

7a. Various answers (depending on what the children choose to round to), for example: Sean's answer is likely to be correct because (when rounding to the nearest 1,000) an approximate answer to the calculation is $28,000\text{m} + 8,000\text{m} = 36,000\text{m}$, and Sean's answer would round to 36,000m.

8a. 391 coins.

9a. Max is correct because $9\frac{3}{4}$ km rounds up to 10,000m. $20,000\text{m} - 10,000\text{m} = 10,000\text{m}$.

Reasoning and Problem Solving Estimate and Approximate

Developing

1b. Various answers (depending on what the children choose to round to), for example: Rachel's answer is likely to be correct because (when rounding to the nearest 1,000) an approximate answer to the calculation is $4,000 - 2,000 = 2,000$, and Rachel's answer would round to 2,000.

2b. 23 counters.

3b. Sonya is incorrect because 1,856 rounds up to 2,000. $2,000 + 2,000 = 4,000$, not 3,000.

Expected

4b. Various answers (depending on what the children choose to round to), for example: Emily's answer is likely to be correct because (when rounding to the nearest 10,000) an approximate answer to the calculation is $30,000 + 10,000 = 40,000$, and Emily's answer would round to 40,000.

5b. 84 coins.

6b. Esther is correct because 17,750 rounds up to 20,000. $80,000 - 20,000 = 60,000$.

Greater Depth

7b. Various answers (depending on what the children choose to round to), for example: Seren's answer is likely to be incorrect because (when rounding to the nearest 100) an approximate answer to the calculation is $53,500\text{m} - 9,800\text{m} = 43,700\text{m}$, but Seren's answer would round to 49,900m.

8b. 17 pieces of rope.

9b. Olivia is incorrect because £244.89 rounds up to £245. $£290 - £245 = £45$, not £35 (3,500p).