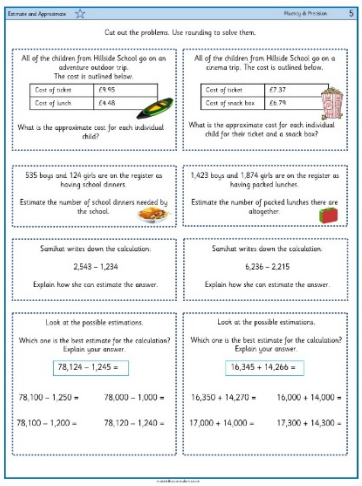
Lesson 7 – Estimate and Approximate

NC Objective:	Resources needed:	Vocabulary:
Use rounding to check answers to calculations and determine in the context of a problem, levels of accuracy.	Differentiated Worksheets Teaching Slides	Estimate, Approximate, rounding, appropriate, nearest 10/100/1,000

Children build on their understanding of estimating and rounding to estimate answers for calculations and problems. The term approximate is used so ensure children understand this and know the symbol. Encourage children to consider the most appropriate number to round to e.g. the nearest ten, hundred or thousand. Reinforce the idea that an estimate should be performed quickly by choosing much easier numbers. Children are to cut out the problems and answer them in their books.

Key Questions:
Which numbers shall I round to?
Why should I round to this number?
Why should an estimate be quick?
When, in real life, would we use an estimate?

★ Working Towards


Estimate and Approximate ☆ Fluency & Precision 5

Cut out the problems. Use rounding to solve them.

All of the children from Hillside School go on an adventure outdoor trip. The cost is outlined below.

Cost of ticket	£9.95
Cost of lunch	£4.48

What is the approximate cost for each individual child?

All of the children from Hillside School go on a cinema trip. The cost is outlined below.

Cost of ticket	£7.37
Cost of snack box	£6.74

What is the approximate cost for each individual child for their ticket and a snack box?

535 boys and 124 girls are on the register as having school dinners.
Estimate the number of school dinners needed by the school.

1,423 boys and 1,874 girls are on the register as having packed lunches.
Estimate the number of packed lunches there are altogether.

Samihat writes down the calculation.
2,543 – 1,234
Explain how she can estimate the answer.

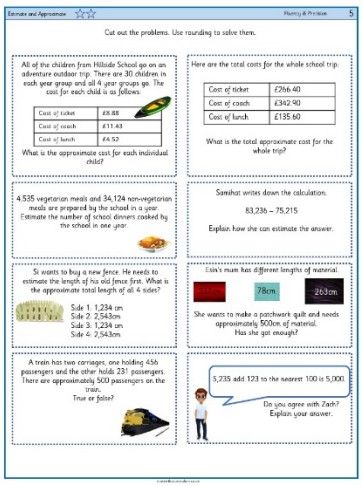
Samihat writes down the calculation.
6,236 – 2,215
Explain how she can estimate the answer.

Look at the possible estimations.
Which one is the best estimate for the calculation? Explain your answer.
78,124 – 1,245 =
78,100 – 1,250 = 78,000 – 1,000 =
78,100 – 1,200 = 78,120 – 1,240 =

Look at the possible estimations.
Which one is the best estimate for the calculation? Explain your answer.
16,345 + 14,266 =
16,350 + 14,270 = 16,000 + 14,000 =
17,000 + 14,000 = 17,300 + 14,300 =

Children on this sheet will answer simple money problems with decimals and explain estimation.

★★ Working Within


Estimate and Approximate ☆☆ Fluency & Precision 5

Cut out the problems. Use rounding to solve them.

All of the children from Hillside School go on an adventure outdoor trip. There are 30 children in each year group and all 4 year groups go. The cost for each child is as follows.

Cost of ticket	£8.88
Cost of coach	£11.43
Cost of lunch	£4.57

What is the approximate cost for each individual child?

Here are the total costs for the whole school trip.

Cost of ticket	£266.40
Cost of coach	£342.90
Cost of lunch	£135.60

What is the total approximate cost for the whole trip?

4,535 vegetarian meals and 34,124 non-vegetarian meals are prepared by the school in a year.
Estimate the number of school dinners cooked by the school in one year.

Samihat writes down the calculation.
83,236 – 75,215
Explain how she can estimate the answer.

Si wants to buy a new fence. He needs to estimate the length of his old fence first. What is the approximate total length of all 4 sides?
Side 1: 1,234 cm
Side 2: 2,543cm
Side 3: 1,234 cm
Side 4: 2,543cm

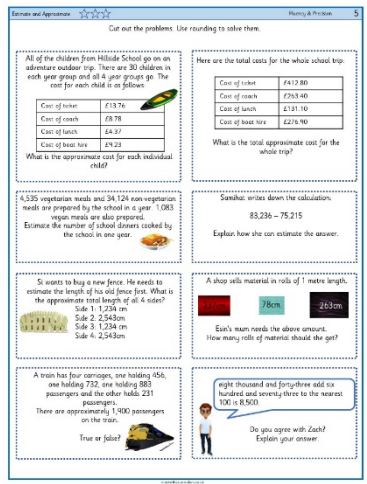
Esin's mum has different lengths of material.
78cm
263cm
She wants to make a patchwork quilt and needs approximately 500cm of material.
Has she got enough?

A train has two carriages, one holding 456 passengers and the other holds 231 passengers. There are approximately 500 passengers on the train.
True or false?

5,235 add 123 to the nearest 100 is 5,000.
Do you agree with Zach? Explain your answer.

Children on this sheet will answer money problems with decimals and other measure problems using estimation.

★★★ Greater Depth


Estimate and Approximate ☆☆☆ Fluency & Precision 5

Cut out the problems. Use rounding to solve them.

All of the children from Hillside School go on an adventure outdoor trip. There are 30 children in each year group and all 4 year groups go. The cost for each child is as follows.

Cost of ticket	£13.76
Cost of coach	£8.78
Cost of lunch	£4.37
Cost of boat hire	£9.23

What is the approximate cost for each individual child?

Here are the total costs for the whole school trip.

Cost of ticket	£412.80
Cost of coach	£263.40
Cost of lunch	£131.10
Cost of boat hire	£276.90

What is the total approximate cost for the whole trip?

4,535 vegetarian meals and 34,124 non-vegetarian meals are prepared by the school in a year. 1,083 vegan meals are also prepared.
Estimate the number of school dinners cooked by the school in one year.

Samihat writes down the calculation.
83,236 – 75,215
Explain how she can estimate the answer.

Si wants to buy a new fence. He needs to estimate the length of his old fence first. What is the approximate total length of all 4 sides?
Side 1: 1,234 cm
Side 2: 2,543cm
Side 3: 1,234 cm
Side 4: 2,543cm

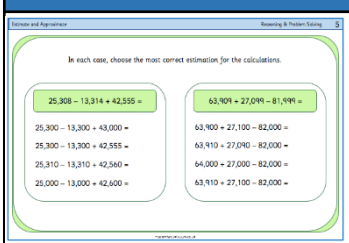
A shop sells material in rolls of 1 metre length.
78cm
263cm
Esin's mum needs the above amount.
How many rolls of material should she get?

A train has four carriages, one holding 456, one holding 732, one holding 883 passengers and the other holds 231 passengers.
There are approximately 1,900 passengers on the train.
True or false?

eight thousand and forty-three add six hundred and seventy-three to the nearest 100 is 8,500
Do you agree with Zach? Explain your answer.

Children on this sheet will answer complex money problems with decimals and other measure problems using estimation.

Reasoning & Problem Solving


Estimate and Approximate Reasoning & Problem Solving 5

In each case, choose the most correct estimation for the calculations.

25,308 – 13,314 + 42,555 =
25,300 – 13,300 + 43,000 =
25,300 – 13,300 + 42,555 =
25,310 – 13,310 + 42,560 =
25,000 – 13,000 + 42,600 =

63,909 + 27,099 – 81,999 =
63,900 + 27,100 – 82,000 =
63,910 + 27,090 – 82,000 =
64,000 + 27,000 – 82,000 =
63,910 + 27,100 – 82,000 =

Children continue working on estimation and approximation of calculations.

They will choose the most appropriate estimation for two calculations.

Cut out the problems. Use rounding to solve them.

All of the children from Hillside School go on an adventure outdoor trip.
The cost is outlined below.

Cost of ticket	£9.95
Cost of lunch	£4.48

What is the approximate cost for each individual child?

All of the children from Hillside School go on a cinema trip. The cost is outlined below.

Cost of ticket	£7.37
Cost of snack box	£6.79

What is the approximate cost for each individual child for their ticket and a snack box?

535 boys and 124 girls are on the register as having school dinners.

Estimate the number of school dinners needed by the school.

1,423 boys and 1,874 girls are on the register as having packed lunches.

Estimate the number of packed lunches there are altogether.

Samihat writes down the calculation:

2,543 – 1,234

Explain how she can estimate the answer.

Samihat writes down the calculation:

6,236 – 2,215

Explain how she can estimate the answer.

Look at the possible estimations.

Which one is the best estimate for the calculation? Explain your answer.

78,124 – 1,245 =

78,100 – 1,250 =

78,000 – 1,000 =

78,100 – 1,200 =

78,120 – 1,240 =

Look at the possible estimations.

Which one is the best estimate for the calculation? Explain your answer.

16,345 + 14,266 =

16,350 + 14,270 =

16,000 + 14,000 =

17,000 + 14,000 =

17,300 + 14,300 =

Cut out the problems. Use rounding to solve them.

Answers may differ depending on the rounding used

All of the children from Hillside School go on an adventure outdoor trip.
The cost is outlined below.

Cost of ticket	£9.95
Cost of lunch	£4.48

What is the approximate cost for each individual child?

£10 + £4 = £14

All of the children from Hillside School go on a cinema trip. The cost is outlined below.

Cost of ticket	£7.37
Cost of snack box	£6.79

What is the approximate cost for each individual child for their ticket and a snack box?

£7 + £7 = £14

535 boys and 124 girls are on the register as having school dinners.

Estimate the number of school dinners needed by the school.

540 + 120 = 660

1,423 boys and 1,874 girls are on the register as having packed lunches.

Estimate the number of packed lunches there are altogether.

1400 + 2,000 = 3,400

Samihat writes down the calculation:
2,543 – 1,234
Explain how she can estimate the answer.

She can round 2,543 to 2,500 and round 1,234 to 1,000.
The estimate would be 1,500

Samihat writes down the calculation:
6,236 – 2,215
Explain how she can estimate the answer.

She can round 6,236 to 6,000 and round 2,215 to 2,000.
The estimate would be 4,000

Look at the possible estimations.

Which one is the best estimate for the calculation?
Explain your answer.

78,124 – 1,245 =

78,100 – 1,250 = (78,000 – 1,000 =) 78,100 – 1,200 = 78,120 – 1,240 =

Look at the possible estimations.

Which one is the best estimate for the calculation?
Explain your answer.

16,345 + 14,266 =

16,350 + 14,270 = (16,000 + 14,000 =) 17,000 + 14,000 = 17,300 + 14,300 =

Cut out the problems. Use rounding to solve them.

All of the children from Hillside School go on an adventure outdoor trip. There are 30 children in each year group and all 4 year groups go. The cost for each child is as follows:

Cost of ticket	£8.88
Cost of coach	£11.43
Cost of lunch	£4.52

What is the approximate cost for each individual child?

Here are the total costs for the whole school trip:

Cost of ticket	£266.40
Cost of coach	£342.90
Cost of lunch	£135.60

What is the total approximate cost for the whole trip?

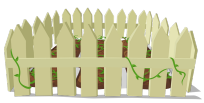
4,535 vegetarian meals and 34,124 non-vegetarian meals are prepared by the school in a year. Estimate the number of school dinners cooked by the school in one year.

Samihat writes down the calculation:

83,236 – 75,215

Explain how she can estimate the answer.

Si wants to buy a new fence. He needs to estimate the length of his old fence first. What is the approximate total length of all 4 sides?



Side 1: 1,234 cm
Side 2: 2,543cm
Side 3: 1,234 cm
Side 4: 2,543cm

Esin's mum has different lengths of material.

She wants to make a patchwork quilt and needs approximately 500cm of material.
Has she got enough?

A train has two carriages, one holding 456 passengers and the other holds 231 passengers. There are approximately 500 passengers on the train.
True or false?

5,235 add 123 to the nearest 100 is 5,000.

Do you agree with Zach?
Explain your answer.

Cut out the problems. Use rounding to solve them.

Answers may differ depending on the rounding used

All of the children from Hillside School go on an adventure outdoor trip. There are 30 children in each year group and all 4 year groups go. The cost for each child is as follows:

Cost of ticket	£8.88
Cost of coach	£11.43
Cost of lunch	£4.52

What is the approximate cost for each individual child?

£9 + £11 + £5 = £25

Here are the total costs for the whole school trip:

Cost of ticket	£266.40
Cost of coach	£342.90
Cost of lunch	£135.60

What is the total approximate cost for the whole trip?

£300 + £300 + £100 = £700

4,535 vegetarian meals and 34,124 non-vegetarian meals are prepared by the school in a year. Estimate the number of school dinners cooked by the school in one year.

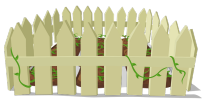
5,000 + 34,000 = 39,000

Samihat writes down the calculation:
83,236 – 75,215

Explain how she can estimate the answer.

She can round 83,236 to 83,000 and round 75,215 to 75,000.
The estimate would be 8,000

Si wants to buy a new fence. He needs to estimate the length of his old fence first. What is the approximate total length of all 4 sides?



Side 1: 1,234 cm
Side 2: 2,543cm
Side 3: 1,234 cm
Side 4: 2,543cm

1,000 + 3,000 + 1,000 + 3,000 = 8,000 cm

Esin's mum has different lengths of material.

She wants to make a patchwork quilt and needs approximately 500cm of material.
Has she got enough?

200 + 100 + 300 = 600cm- yes

A train has two carriages, one holding 456 passengers and the other holds 231 passengers. There are approximately 500 passengers on the train.
True or false?

I think this is an under estimation. There's approximately 700 passengers.

5,235 add 123 to the nearest 100 is 5,000.

Do you agree with Zach?
Explain your answer.

I disagree. It is 5,400. (If the students round to 5200 and 100 first, their answer might be 5,300.)

Cut out the problems. Use rounding to solve them.

All of the children from Hillside School go on an adventure outdoor trip. There are 30 children in each year group and all 4 year groups go. The cost for each child is as follows:

Cost of ticket	£13.76
Cost of coach	£8.78
Cost of lunch	£4.37
Cost of boat hire	£9.23

What is the approximate cost for each individual child?

Here are the total costs for the whole school trip:

Cost of ticket	£412.80
Cost of coach	£263.40
Cost of lunch	£131.10
Cost of boat hire	£276.90

What is the total approximate cost for the whole trip?

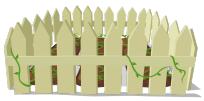
4,535 vegetarian meals and 34,124 non-vegetarian meals are prepared by the school in a year. 1,083 vegan meals are also prepared.
Estimate the number of school dinners cooked by the school in one year.

Samihat writes down the calculation:

83,236 – 75,215

Explain how she can estimate the answer.

Si wants to buy a new fence. He needs to estimate the length of his old fence first. What is the approximate total length of all 4 sides?



Side 1: 1,234 cm
Side 2: 2,543cm
Side 3: 1,234 cm
Side 4: 2,543cm

A shop sells material in rolls of 1 metre length.

Esin's mum needs the above amount.
How many rolls of material should she get?

A train has four carriages, one holding 456, one holding 732, one holding 883 passengers and the other holds 231 passengers.
There are approximately 1,900 passengers on the train.

True or false?

eight thousand and forty-three add six hundred and seventy-three to the nearest 100 is 8,500.

Do you agree with Zach?
Explain your answer.

Cut out the problems. Use rounding to solve them.

Answers may differ depending on the rounding used

All of the children from Hillside School go on an adventure outdoor trip. There are 30 children in each year group and all 4 year groups go. The cost for each child is as follows:

Cost of ticket	£13.76
Cost of coach	£8.78
Cost of lunch	£4.37
Cost of boat hire	£9.23

What is the approximate cost for each individual child?

£14 + £9 + £4 + £9 = £36

Here are the total costs for the whole school trip:

Cost of ticket	£412.80
Cost of coach	£263.40
Cost of lunch	£131.10
Cost of boat hire	£276.90

What is the total approximate cost for the whole trip?

£400 + £300 + £100 + £300 = £1,100

4,535 vegetarian meals and 34,124 non-vegetarian meals are prepared by the school in a year. 1,083 vegan meals are also prepared.
Estimate the number of school dinners cooked by the school in one year.

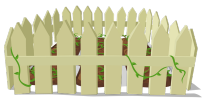
5,000 + 34,000 + 1,000 = 40,000

Samihat writes down the calculation:
83,236 – 75,215

Explain how she can estimate the answer.

She can round 83,236 to 83,000 and round 75,215 to 75,000.
The estimate would be 8,000

Si wants to buy a new fence. He needs to estimate the length of his old fence first. What is the approximate total length of all 4 sides?



Side 1: 1,234 cm
Side 2: 2,543cm
Side 3: 1,234 cm
Side 4: 2,543cm

1,000 + 3,000 + 1,000 + 3,000 = 8,000 cm

A shop sells material in rolls of 1 metre length.

Esin's mum needs the above amount.
How many rolls of material should she get?

6 rolls

A train has four carriages, one holding 456, one holding 732, one holding 883 passengers and the other holds 231 passengers.
There are approximately 1,900 passengers on the train.

False, there are approximately 2,300 passengers.

True or false?

eight thousand and forty-three add six hundred and seventy-three to the nearest 100 is 8,500.

Do you agree with Zach?
Explain your answer.

I disagree. It is 8,700.

In each case, choose the most correct estimation for the calculations.

25,308 – 13,314 + 42,555 =

25,300 – 13,300 + 43,000 =

25,300 – 13,300 + 42,555 =

25,310 – 13,310 + 42,560 =

25,000 – 13,000 + 42,600 =

63,909 + 27,099 – 81,999 =

63,900 + 27,100 – 82,000 =

63,910 + 27,090 – 82,000 =

64,000 + 27,000 – 82,000 =

63,910 + 27,100 – 82,000 =

Estimate and Approximate Reasoning & Problem Solving 5

In each case, choose the most correct estimation for the calculations.

25,308 – 13,314 + 42,555 =

25,300 – 13,300 + 43,000 =

25,300 – 13,300 + 42,555 =

25,310 – 13,310 + 42,560 =

25,000 – 13,000 + 42,600 =

63,909 + 27,099 – 81,999 =

63,900 + 27,100 – 82,000 =

63,910 + 27,090 – 82,000 =

64,000 + 27,000 – 82,000 =

63,910 + 27,100 – 82,000 =

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In each case, choose the most correct estimation for the calculations.

25,308 – 13,314 + 42,555 = 54,549

25,300 – 13,300 + 43,000 = 55,000

25,300 – 13,300 + 42,555 = 54,555

25,310 – 13,310 + 42,560 = 54,560

25,000 – 13,000 + 42,600 = 54,600

63,909 + 27,099 – 81,999 = 9,009

63,900 + 27,100 – 82,000 = 9,000

63,910 + 27,090 – 82,000 = 9,000

64,000 + 27,000 – 82,000 = 9,000

63,910 + 27,100 – 82,000 = 9,010

Estimate and Approximate Answers Reasoning & Problem Solving 5

In each case, choose the most correct estimation for the calculations.

25,308 – 13,314 + 42,555 = 54,549

25,300 – 13,300 + 43,000 = 55,000

25,300 – 13,300 + 42,555 = 54,555

25,310 – 13,310 + 42,560 = 54,560

25,000 – 13,000 + 42,600 = 54,600

63,909 + 27,099 – 81,999 = 9,009

63,900 + 27,100 – 82,000 = 9,000

63,910 + 27,090 – 82,000 = 9,000

64,000 + 27,000 – 82,000 = 9,000

63,910 + 27,100 – 82,000 = 9,010

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