Reasoning and Problem Solving – Round Decimals

National Curriculum Objectives:

Mathematics Year 4: (4F8) Compare numbers with the same number of decimal places up to two decimal places
Mathematics Year 4: (4F7) Round decimals with one decimal place to the nearest whole number

Differentiation:

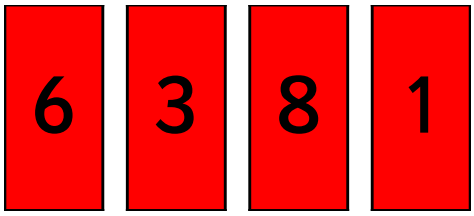
Questions 1, 4 and 7 (Problem Solving)
Developing Using a set of four number cards, work out two possible decimals (tenths) which could have been rounded to two given whole numbers. No 0.5s used.
Expected Using a set of six number cards, work out three possible decimals (tenths) which could have been rounded to three given whole numbers. All tenths used.
Greater Depth Using a set of nine number cards, work out three possible decimals (tenths and hundredths) which could have been rounded to three given decimals (tenths). All hundredths used.

Questions 2, 5 and 8 (Reasoning)
Developing Explaining the truth of a statement about two different decimal measurements (tenths) rounded to the same whole number. Both decimal measurements are on the same side of the whole number.
Expected Explaining the truth of a statement about two different decimal measurements (tenths) rounded to the same whole number. Decimal measurements are either side of the whole number.
Greater Depth Explaining the truth of a statement about two different decimal measurements (hundredths) rounded to the same decimal number (tenths). Decimal measurements (hundredths) are either side of the decimal number (tenths).

Questions 3, 6 and 9 (Problem Solving)
Developing Identifying a decimal (tenths) from the clues provided. Two simple clues.
Expected Identifying a decimal (tenths) from the clues provided. Three complex clues.
Greater Depth Identifying a decimal (hundredths) from the clues provided. Three complex clues.

Reasoning and Problem Solving – Round Decimals

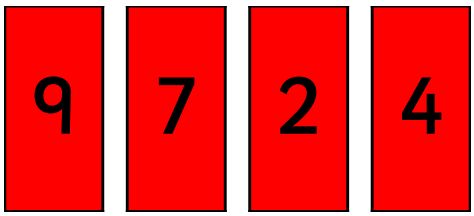
1a. Curtis used number cards to make two decimals, but then his cards got mixed up!



He remembers that his decimals rounded to 4 and 6.
What might have been the two decimals Curtis made?

D PS

1b. Ella used number cards to make two decimals, but then her cards got mixed up!



She remembers that her decimals rounded to 3 and 7.
What might have been the two decimals Ella made?

D PS

2a. These ships are different lengths, but the lengths have both been rounded up to 8m.

There is a difference of 0.3m between the actual lengths of the two ships.

Is what the mechanic says possible?
Explain your answer.

D R

2b. These motorbikes are different lengths, but the lengths have both been rounded down to 2m.

There is a difference of 0.2m between the actual lengths of the two motorbikes.

Is what the mechanic says possible?
Explain your answer.

D R

3a. Ellis is thinking of a decimal.

Ellis

My decimal rounds down to 3.

My decimal has the number 4 in it.

What is Ellis' decimal?

D PS

3b. Yona is thinking of a decimal.

Yona

My decimal rounds up to 2.

My decimal has the number 8 in it.

What is Yona's decimal?

D PS

Reasoning and Problem Solving – Round Decimals

4a. Cali used number cards to make three decimals, but then her cards got mixed up!

1	2	8	7	8	5

She remembers that her decimals rounded to 2, 7 and 9.
What might have been the three decimals Cali made?

E PS

4b. Trey used number cards to make three decimals, but then his cards got mixed up!

3	0	4	6	9	7

He remembers that his decimals rounded to 5, 6 and 1.
What might have been the three decimals Trey made?

E PS

5a. These buses are different lengths, but the lengths have both been rounded to 6m.


There is a difference of 0.6m between the actual lengths of the two buses.

Is what the mechanic says possible?
Explain your answer.

E R

5b. These helicopters are different lengths, but the lengths have both been rounded to 4m.


There is a difference of 0.9m between the actual lengths of the two helicopters.

Is what the mechanic says possible?
Explain your answer.

E R

6a. Cheryl is thinking of a decimal.

Cheryl

My decimal does not contain the number 7.

It rounds up to 10.

The number of tenths in my decimal is odd, but is not the same as the number of ones.

What is Cheryl's decimal?

E PS

6b. Mo is thinking of a decimal.

Mo

My decimal does not contain the number 2.

It rounds down to 8.

The number of tenths in my decimal is even.

What is Mo's decimal?

E PS

Reasoning and Problem Solving – Round Decimals

7a. Lee used number cards to make three decimals, but then his cards got mixed up!

2	9	1	8	8	3	7	5	5

He remembers that his decimals rounded to 1.8, 9.9 and 5.4.
What might have been the three decimals Lee made?

GD

PS

7b. Aimee used number cards to make three decimals, but then her cards got mixed up!

0	5	8	2	5	3	4	0	4

She remembers that her decimals rounded to 4.1, 8.5 and 0.2.
What might have been the three decimals Aimee made?

GD

PS

8a. These taxis are different lengths, but the lengths have both been rounded to 5.1m.

There is a difference of 0.08m between the actual lengths of the two taxis.

Is what the mechanic says possible?
Explain your answer.

GD

R

8b. These trains are different lengths, but the lengths have both been rounded to 9.7m.

There is a difference of 0.07m between the actual lengths of the two trains.

Is what the mechanic says possible?
Explain your answer.

GD

R

9a. Gruff is thinking of a decimal.

Gruff

My decimal rounds to 0.4.

The digits in its tenths and hundredths columns add up to 8.

The digit in the tenths column is odd.

What is Gruff's decimal?

GD

PS

9b. Mabs is thinking of a decimal.

Mabs

My decimal rounds to 4.5.

The digits in its tenths and hundredths columns add up to 9.

The digit in the hundredths column is even.

What is Mabs' decimal?

GD

PS

Reasoning and Problem Solving – Round Decimals

Developing

1a. 3.8 and 6.1.
1b. 2.9 and 7.4.
2a. Yes it is possible. Any two lengths which are 0.3m apart and which both round up to 8m (e.g. 7.6m and 7.9m) are acceptable evidence.
2b. Yes it is possible. Any two lengths which are 0.2m apart and which both round down to 2m (e.g. 2.1m and 2.3m) are acceptable evidence.
3a. Ellis' decimal is 3.4.
3b. Yona's decimal is 1.8.

Expected

4a. 1.8; 7.2 and 8.5. Various other solutions are possible.
4b. 4.7; 6.3 and 0.9. Various other solutions are possible.
5a. Yes it is possible. Any two lengths which are 0.6m apart and which both round to 6m (e.g. 5.5m and 6.1m) are acceptable evidence.
5b. Yes it is possible. The two lengths which are 0.9m apart and which both round to 4m (3.5m and 4.4m) are acceptable evidence.
6a. Cheryl's decimal is 9.5.
6b. Mo's decimal is 8.4.

Greater Depth

7a. 1.82; 9.87 and 5.35. Various other solutions are possible.
7b. 4.05; 8.54; and 0.23. Various other solutions are possible.
8a. Yes it is possible. Any two lengths which are 0.08m apart and which both round to 5.1m (e.g. 5.06m and 5.14m) are acceptable evidence.
8b. Yes it is possible. Any two lengths which are 0.07m apart and which both round to 9.7m (e.g. 9.66m and 9.73m) are acceptable evidence.
9a. Gruff's decimal is 0.35.
9b. Mabs' decimal is 4.54.