

# Reasoning and Problem Solving

## Step 6: Rounding Decimals

### National Curriculum Objectives:

Mathematics Year 5: (5F7) [Round decimals with two decimal places to the nearest whole number and to one decimal place](#)

### Differentiation:

Questions 1, 4 and 7 (Problem Solving)

**Developing** Complete the maze by travelling through decimal numbers (up to 1 decimal place) which round to a given whole number.

**Expected** Complete the maze by travelling through decimal numbers (up to 2 decimal places) which round to a given tenth, including the use of 0 as a place holder.

**Greater Depth** Complete the maze by travelling through decimal numbers (up to 3 decimal places) which round to a given tenth, including the use of 0 as a place holder.

Questions 2, 5 and 8 (Problem Solving)

**Developing** Use understanding of rounding to the nearest whole number to identify a number with 1 decimal place.

**Expected** Use understanding of rounding to the nearest tenth and whole number to identify a number with 2 decimal places, including the use of 0 as a place holder.

**Greater Depth** Use understanding of rounding to the nearest tenth and whole number to identify a number with 3 decimal places, including the use of 0 as a place holder.

Questions 3, 6 and 9 (Reasoning)

**Developing** Explain errors when rounding numbers with 1 decimal place to the nearest whole number.

**Expected** Explain errors when rounding numbers with 2 decimal places to the nearest tenth and whole number, including the use of 0 as a place holder.

**Greater Depth** Explain errors when rounding numbers with 3 decimal places to the nearest tenth and whole number, including the use of 0 as a place holder.

More [Year 5 Decimals and Percentages](#) resources.

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## Rounding Decimals

## Rounding Decimals

1a. Move through the maze by circling numbers that round to 7.

Start

6.6	6.4	4.8	5.9
6.9	7.5	6.3	8.2
7.2	6.8	7.1	6.1
7.6	6.4	6.5	7.3

Finish



PS

1b. Move through the maze by circling numbers that round to 9.

Start

8.7	9.4	8.2	9.7
9.5	8.6	9.6	8.1
8.4	9.3	8.5	9.1
9.9	8.3	9.8	9.2

Finish



PS

2a. I'm thinking of a number with 1 decimal place.

- The tenth is an odd number.
- When rounded to the nearest whole number, my number is 6.

What could my number be?



PS

2b. I'm thinking of a number with 1 decimal place.

- The tenth is an even number.
- When rounded to the nearest whole number, my number is 8.

What could my number be?



PS

3a. Micha has been rounding 5.5. She says,



5.5 rounded to the nearest whole number is 5.

Is she correct? Prove it.



R

3b Gavin has been rounding 9.2. He says,



9.2 rounded to the nearest whole number is 8.

Is he correct? Prove it.



R

## Rounding Decimals

4a. Move through the maze by circling numbers where the tenth is rounded to 6 tenths.

Start

5.57	8.63	9.55	8.67
6.54	7.65	1.58	4.52
2.69	9.53	8.64	5.56
3.68	2.68	1.51	7.61

Finish



PS

## Rounding Decimals

4b. Move through the maze by circling numbers where the tenth is rounded to 4 tenths.

Start

3.36	2.56	4.29	1.09
5.42	6.39	7.49	8.65
8.48	7.38	9.44	6.33
9.62	5.04	3.37	6.41

Finish



PS

5a. I'm thinking of a number with 2 decimal places.

- The hundredth is an odd number.
- The tenth is an even number.
- When rounded to the nearest tenth, my number is 5.4.
- When rounded to the nearest whole number, my number is 5.

What could my number be?



PS

5b. I'm thinking of a number with 2 decimal places.

- The hundredth is an even number.
- The tenth is an odd number.
- When rounded to the nearest tenth, my number is 7.6.
- When rounded to the nearest whole number, my number is 8.

What could my number be?



PS

6a. Tiana has been rounding 7.49. She says,



7.49 rounded to the nearest tenth is 7.5.

7.49 rounded to the nearest whole number is 8.

Is she correct? Prove it.



R

6b Bruce has been rounding 5.95. He says,



5.95 rounded to the nearest tenth is 6.

5.95 rounded to the nearest whole number is 6.

Is he correct? Prove it.



R

## Rounding Decimals

7a. Move through the maze by circling numbers where the tenth is rounded to 8 tenths.

Start

6.792	3.824	8.862	2.744
9.732	7.777	2.719	7.874
8.859	8.801	1.768	4.861
0.891	4.733	9.819	5.785

Finish



PS

## Rounding Decimals

7b. Move through the maze by circling numbers where the tenth is rounded to 3 tenths.

Start

9.308	3.357	5.212	8.207
4.341	7.229	8.399	5.371
7.294	1.329	5.361	7.242
3.376	5.285	6.319	2.257

Finish



PS

8a. I'm thinking of a number with 3 decimal places.

- The thousandth is an odd number  $> 0.005$ .
- The hundredth is an even number.
- The tenth is an odd number.
- When rounded to the nearest tenth, my number is 4.3.
- When rounded to the nearest whole number, my number is 4.

What could my number be?



PS

8b. I'm thinking of a number with 3 decimal places.

- The thousandth is an odd number  $< 0.005$ .
- The hundredth is an odd number.
- The tenth is an even number.
- When rounded to the nearest tenth, my number is 6.7.
- When rounded to the nearest whole number, my number is 7.

What could my number be?



PS

9a. Molly has been rounding 3.608. She says,



3.608 rounded to the nearest tenth is 3.7.

3.608 rounded to the nearest whole number is 4.

Is she correct? Prove it.



R

9b Sunil has been rounding 9.095. He says,



9.095 rounded to the nearest tenth is 9.1.

9.095 rounded to the nearest whole number is 10.

Is he correct? Prove it.



R

## Reasoning and Problem Solving Rounding Decimals

### Developing

1a.

6.6	6.4	4.8	5.9
6.9	7.5	6.3	8.2
7.2	6.8	7.1	6.1
7.6	6.4	6.5	7.3

2a. Possible answers: 5.5, 5.7, 5.9, 6.1 or 6.3

3a. Micha is incorrect. The 5 tenths rounds the whole number up to 6.

### Expected

4a.

5.57	8.63	9.55	8.67
6.54	7.65	1.58	4.52
2.69	9.53	8.64	5.56
3.68	2.68	1.51	7.61

5a. Possible answers: 5.41 or 5.43

6a. Tiana's first statement is correct. Her second is incorrect. 7.49 rounded to the nearest whole number is 7.

### Greater Depth

7a.

6.792	3.824	8.862	2.744
9.732	7.777	2.719	7.874
8.859	8.801	1.768	4.861
0.891	4.733	9.819	5.785

8a. Possible answers: 4.307, 4.309, 4.327, 4.329, 4.347 or 4.349

9a. Molly's first statement is incorrect. 3.608 rounded to the nearest tenth is 3.6. Her second statement is correct.

## Reasoning and Problem Solving Rounding Decimals

### Developing

1b.

8.7	9.4	8.2	9.7
9.5	8.6	9.6	8.1
8.4	9.3	8.5	9.1
9.9	8.3	9.8	9.2

2b. Possible answers: 8.2, 8.4, 7.6 or 7.8

3b. Gavin is incorrect. The 2 tenths rounds the whole number down to 9.

### Expected

4b.

3.36	2.56	4.29	1.09
5.42	6.39	7.49	8.65
8.48	7.38	9.44	6.33
9.62	5.04	3.37	6.41

5b. Possible answers: 7.56 or 7.58

6b. Bruce is correct. The 5 hundredths means that the 9 tenths is rounded to the next whole number.

### Greater Depth

7b.

9.308	3.357	5.212	8.207
4.341	7.229	8.399	5.371
7.294	1.329	5.361	7.242
3.376	5.285	6.319	2.257

8b. Possible answers: 6.651, 6.653, 6.671, 6.673, 6.691 or 6.693

9b. Sunil's first statement is correct. His second is incorrect. 9.095 rounded to the nearest whole number is 9.