## Rounding decimals

(1) Show the position of each number on the number line.

Use the number line to round these decimals to the nearest whole number.
a) 7.2


The nearest whole number is $\square$
2 Use the number line to round these decimal numbers to the nearest tenth and the nearest whole number.
a) 7.23


The nearest tenth is $\square$

The nearest whole number is $\square$
b) 14.56

The nearest tenth is $\square$
The nearest whole number is $\square$
c) 6.45


The nearest tenth is $\square$
The nearest whole number is $\square$

Explain to a partner how to round decimal numbers to one decimal place.


$$
\text { The nearest whole number is } \square
$$

c) 6.5


The nearest whole number is $\square$

Explain to a partner how to round decimal numbers to the nearest whole number.
a) When rounding to the nearest tenth, how many digits will there be after the decimal point? $\square$
b) Round each number to one decimal place.

4. Round each number to the nearest tenth.
a) 4.21 $\square$
d) 11.86 $\square$
b) 8.09 $\square$
e) 5.67
$\square$
c) 4.84 $\square$ f) 0.15 $\square$
g) 12.92

h) 10.65 $\square$
(5) Circle each decimal that rounds to 6.2
6.32
6.23
6.27
6.17
6.12
Explain your reasoning.
$\qquad$
$\qquad$

6 Here are the weights in kilograms of some parcels.

3.48 kg

1.42 kg

10.65 kg

1.03 kg
a) Round the weight of each parcel to 1 decimal place.
$\square$
$\square$
$\square$
$\square$ kg
b) The weight of each parcel has been rounded to the nearest 100 g .

Is this true or false? $\qquad$
Talk about it with a partner.
7) Amir is thinking of a number

Rounded to the nearest whole his number is 5
Rounded to the nearest tenth his number is 4.8
Write at least four different numbers that Amir could be thinking of.
(8) A farmer is building a new fence for her sheep field.

Here are the measurements.


She wants to build a fence around the whole field.
Estimate how much fencing you think she will need.

## Rounding decimals

Show the position of each number on the number line. Use the number line to round these decimals to the nearest whole number.
a) 7.2


$$
\text { The nearest whole number is } 7
$$

b) 14.8


The nearest whole number is 15
c) 6.5


The nearest whole number is $\square$ 7

Explain to a partner how to round decimal numbers to the nearest whole number.

2
Use the number line to round these decimal numbers to the nearest tenth and the nearest whole number.
a) 7.23


The nearest tenth is $\square$

The nearest whole number is
b) 14.56


The nearest tenth is 14.6

The nearest whole number is
c) 6.45


The nearest tenth is $\square$ 6.5

The nearest whole number is $\square$

Explain to a partner how to round decimal numbers to one
a) When rounding to the nearest tenth, how many digits will there be after the decimal point?
a) Round the weight of each parcel to 1 decimal place.
$\square$
$\square$
$\square$
1.0 kg
b) The weight of each parcel has been rounded to the nearest 100 g Is this true or false? true

Talk about it with a partner.

Amir is thinking of a number.
Rounded to the nearest whole his number is 5
Rounded to the nearest tenth his number is 4.8
Write at least four different numbers that Amir could be thinking of.
e.g. $4.75,4.79,4.81,4.84$

8 A farmer is building a new fence for her sheep field. Here are the measurements.


She wants to build a fence around the whole field
Estimate how much fencing you think she will need.


Talk about your estimate with a partner.

6 Here are the weights in kilograms of some parcels.

3.48 kg

1.42 kg

10.65 kg

1.03 kg

Which number is greater?
Tick your answer.


Explain your answer.
$\qquad$
$\qquad$
(2) Which is the smaller number?

Tick your answer.


Explain your answer.
$\qquad$
(3)

Use place value counters to make each of the numbers.

a) Which is the greatest number?
b) Which is the smallest number?

How do you know?

Here are some numbers in a place value chart.

| Ones | Tenths | Hundredths | Thousandths |  |
| :---: | :---: | :---: | :---: | :---: |
| 3 | 6 | 2 | 3 | 4 |
| 3 | 6 | 1 | 6 |  |
| 3 | 0 | 2 | 0 | 8 |
| 3 | 1 | 4 | 5 |  |

Write the numbers in order, starting with the greatest.


5 Mo, Amir, Ron, Teddy and Jack are measuring their heights with a metre rule.


Write the names and heights of the children in order from shortest to tallest.

| Name | Height |
| :---: | :---: |
|  |  |
|  |  |
|  |  |
|  | © White Rose Maths 2019 |

Alex and Dora are competing in the long jump.
Alex jumps 1.35 metres and Dora jumps 1.4 metres.

a) Is Dora correct? $\qquad$ Talk about it with a partner.
b) Kim joins in the competition.

What is the shortest distance she can jump to go into the lead?
(7) Write the numbers in ascending order.


9 Tick the numbers that are equal to 2.5
Circle the numbers that are greater than 2.5
You will need to convert the mixed numbers to decimal numbers first.
2.05


2.53

2.501

$$
2 \frac{80}{100}
$$

$$
2 \frac{3}{10}
$$

Order and compare decimals

1
Which number is greater?
Tick your answer.

| T | 0 - Tth | Hth | T | 0 Tth | Hth |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{aligned} & \hline 0.01 \\ & 0.010 \\ & 0.010 \\ & 0.01 \end{aligned}$ |  | $\begin{array}{ll}1 & 1 \\ 1 & 1 \\ 1 & 1\end{array}$ | (0.0) (0.01) |

Explain your answer.
It has more ones. $\qquad$

2
Which is the smaller number?
Tick your answer.

| T | O | Tth | Hth |  |
| :---: | :---: | :---: | :---: | :---: |
| 10 | 1 | 1 | 0.10 | 0.01 |
|  |  | 0.01 |  |  |


| $T$ | 0 | Tth | Hth |
| :---: | :---: | :---: | :---: |
|  | 1 | 1 | 0 |
|  |  | 0 |  |
|  |  |  | 0 |

Explain your answer.
It has rewer terthn.
$\qquad$
(3)

Use place value counters to make each of the numbers.

a) Which is the greatest number?
5.1
b) Which is the smallest number?

How do you know?
4.

Here are some numbers in a place value chart.

| Ones | - | Tenths | Hundredths | Thousandths |
| :---: | :---: | :---: | :---: | :---: |
| 3 | 0 | 2 | $\mathbf{3}$ | 4 |
| 3 | 0 | 1 | 6 |  |
| 3 | 0 | 2 | 0 | 8 |
| 3 | 1 | 4 | 5 |  |

Write the numbers in order, starting with the greatest.

(5) Mo, Amir, Ron, Teddy and Jack are measuring their heights with a metre rule.


Write the names and heights of the children in order from shortest to tallest.

| Name | Height |
| :---: | :---: |
| Teddy | 1.3 m |
| Ron | 1.32 m |
| MO | 1.35 m |
| Jack | 1.5 m |
| Amir | 1.52 m |
| O White Rose Maths 2019 |  |

(6)

Alex and Dora are competing in the long jump.
Alex jumps 1.35 metres and Dora jumps 1.4 metres.

a) Is Dora correct? $\quad \mathrm{A}$ N

Talk about it with a partner.
b) Kim joins in the competition.

What is the shortest distance she can jump to go into the lead?
$\qquad$
7) Write the numbers in ascending order.


8 Dexter is thinking of a number.


What possible numbers could Dexter be thinking of?
$2.48,2.49,2.50,2.51,2.52,2.53,2.54,2.55,2.56,2.57$
9) Tick the numbers that are equal to 2.5

Circle the numbers that are greater than 2.5
You will need to convert the mixed numbers to decimal numbers first.
$\square$

$\square$ 2.53


```
2.501
```


(2) Complete the table.


Shade $15 \%$ of the hundred square red.
Shade $32 \%$ of the hundred square blue.

$\square$
a) Is $1 \%$ of this bar model shaded? $\qquad$

| $1 \%$ |  |  |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

Explain your reasoning.
$\qquad$
$\qquad$
b) What percentage of each bar model is shaded?


|  |  |  |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |



5 Passengers are boarding a plane.
The plane has 100 seats.
a) $10 \%$ of the seats are already full.

How many passengers are already on the plane?

b) $15 \%$ of the seats have not been booked.

How many seats have been booked?

c) How many passengers still need to board the plane? $\square$
Shade 85\% of this bar model.


[^0]Understand percentages
(1) Complete the sentence for each diagram.
c)

hundred shaded.

This is
$\square$ 65

频
a)


There are $\square$ parts out of a hundred shaded.

This is $\qquad$ $\%$.
b)


There are $\square$ parts out of a hundred shaded.

This is 24 $\%$.

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Maths
(2)

Complete the table.


Shade $15 \%$ of the hundred square red.
Shade $32 \%$ of the hundred square blue.


What percentage of the hundred square is not shaded? $53 \%$
(4)
a) Is $1 \%$ of this bar model shaded? №


Explain your reasoning.
It's split into 10 parts so each part is $10 \%$
b) What percentage of each bar model is shaded?



Passengers are boarding a plane.
The plane has 100 seats.
a) $10 \%$ of the seats are already full.

How many passengers are already on the plane?
b) $15 \%$ of the seats have not been booked. How many seats have been booked?
c) How many passengers still need to board the plane?

Dexter has $£ 1$ to spend.
He buys some stickers.


What percentage of his money did Dexter spend?

There are 100 seats available.

- On Monday they sold 34\% of the tickets.
- On Tuesday they sold 42 tickets.
- By the end of Wednesday, 95\% of the tickets had been sold. How many tickets did they sell on Wednesday?
(7)

Aisha and Brett have been selling tickets for the school play.

On Wednesday they sold 19 tickets.
$\qquad$
On Wednesday they sold 19 tickets.

Shade $85 \%$ of this bar model.
$\square$

Compare answers with a partner.
On Wednesday they sold 19 tickets.

.

Prove that 0.2 is equal to $20 \%$.
You may use the hundred square to help you.


Why do you think some people think that 0.2 is equal to $2 \%$ ?
(3) Complete the fraction, decimal and percentage equivalents.
a) $32 \%=\frac{\square}{100}=\square$ $35 \%=\frac{\square}{100}=\square$

$$
48 \%=\frac{\square}{100}=\square
$$

c) $0.29=\square \%=\frac{\square}{100}$

$$
0.71=\square \%=\frac{\square}{100}
$$

$$
0.03=\square \%=\frac{\square}{100}
$$

b) $\frac{17}{100}=\square \%=\square$ $\frac{9}{100}=\square \%=\square$
$\frac{90}{100}=\square \%=\square$

4 Write $<$, $>$ or $=$ to complete the statements.
a) $50 \%$

d)

b) $25 \%$

c) $14 \%$

e)

f) $82 \%$

(5) Write the values in order from smallest to greatest.
a) $33 \%$
$\frac{30}{100}$
$3 \%$
$\frac{13}{100}$
b) $299 \% \quad \frac{91}{100} \quad 9 \% \quad \frac{9}{10}$
c) 2.5
$\frac{25}{100}$ 250 $25 \%$ of 100 $\frac{25}{1000}$
$\qquad$

6 Convert the fractions to hundredths.
Complete the decimal and percentage equivalents.
a) $\frac{150}{300}=\frac{\square}{100}=\square=\square \%$
b) $\frac{25}{500}=\frac{\square}{100}=\square=\square \%$
c) $\frac{48}{300}=\frac{\square}{100}=\square=\square \%$
d) $\frac{18}{50}=\frac{\square}{100}=\square=\square \%$
e) $\frac{13}{25}=\frac{\square}{100}=\square=\square \%$
7) Circle all the fractions that are greater than or equal to $50 \%$.
$\frac{10}{50}$

$\square$


8 Jack and Dora go shopping with the same amount of money.
Jack spends $\frac{1}{3}$ of his money.
Dora spends $30 \%$ of her money.
a) Who spends more money?

Use fraction and percentage equivalence to explain your answer.
b) Jack and Dora each started with $£ 300$

How much money do they each have left?


Dora $\square$

Percentages as fractions and decimals
(1)

Here are four hundred squares.


Complete the table.

| Hundred <br> square | Percentage | Fraction | Decimal |
| :---: | :---: | :---: | :---: |
| A | $52 \%$ | $\frac{52}{100}$ | 0.52 |
| B | $24 \%$ | $\frac{24}{100}$ | 0.24 |
| C | $88 \%$ | $\frac{88}{100}$ | 0.88 |
| D | $100 \%$ | $\frac{100}{100}$ | 1 |

(2)

Prove that 0.2 is equal to $20 \%$.
You may use the hundred square to help you.

Why do you think some people think that 0.2 is equal to $2 \%$ ?

3
Complete the fraction, decimal and percentage equivalents.
a) $32 \%=\frac{32}{100}=0.32$
c) $0.29=29 \%=\frac{29}{100}$
$0.71=71 \%=\frac{71}{100}$

$$
35 \%=\frac{35}{100}=0.35
$$

$$
48 \%=\frac{48}{100}=0.48
$$

$$
0.03=3 \quad \%=\frac{3}{100}
$$

b) $\frac{17}{100}=17 \%=0.17$

$$
\begin{aligned}
& \frac{9}{100}=9 \%=0.09 \\
& \frac{90}{100}=90 \%=0.9
\end{aligned}
$$



$$
0.2=2 \text { tenths }=\frac{2}{10}=\frac{20}{100}
$$

$$
20 \%=\frac{20}{100}
$$

(4) Write $<,>$ or $=$ to complete the statements.
a) $50 \%$

d) $\frac{40}{100}=40 \%$
b) $25 \%$

e) $\frac{70}{100}>7 \%$
f) $82 \% ~=\frac{82}{100}$Write the values in order from smallest to greatest.
a) $33 \%$

$\frac{13}{100}$

$$
3 \%, \quad \frac{13}{100}, \quad \frac{30}{100}, \quad 33 \%
$$

b) $299 \% \quad \frac{91}{100} \quad 9 \% \quad \frac{9}{10}$
$\qquad$

| c) 2.5 | $\frac{25}{100}$ | 250 | $25 \%$ of 100 | $\frac{25}{1000}$ |
| ---: | ---: | ---: | ---: | ---: |
| $\frac{25}{1000}$ | $\frac{25}{100}$ | 2.5 | $25 \%$ of 100 | 250 |

6 Convert the fractions to hundredths.
Complete the decimal and percentage equivalents.
a) $\frac{150}{300}=\frac{50}{100}=5.5=50 \%$
b) $\frac{25}{500}=\frac{5}{100}=0.05=5 \%$
c) $\frac{48}{300}=\frac{16}{100}=0.16=16 \%$
$\qquad$
$\qquad$ ,
d) $\frac{18}{50}=\frac{36}{100}=0.36=36 \%$
e) $\frac{13}{25}=\frac{52}{100}=5.52=52 \%$
(7) Circle all the fractions that are greater than or equal to $50 \%$.

| $\frac{10}{50}$ |
| :---: |


$\frac{30}{80}$
$\frac{1}{50}$


8 Jack and Dora go shopping with the same amount of money. Jack spends $\frac{1}{3}$ of his money. Dora spends $30 \%$ of her money.
a) Who spends more money? Jade

Use fraction and percentage equivalence to explain your answer.

$$
\begin{aligned}
\frac{1}{3} & =\frac{10}{30} \\
30 \%=\frac{3}{10} & =\frac{9}{30}
\end{aligned}
$$

b) Jack and Dora each started with $£ 300$ How much money do they each have left?


Equivalent F.D.P

1
Rosie makes a number on a 100 bead string.

-0000000000000000000000000000000000000000 —00000000000000000000-_
a) What fraction of the bead string is circled?
b) Write the fraction as a decimal.
c) Write the decimal as a percentage.

$\square$ $\%$
2) Circle the value on each 100 bead string.
a) $70 \%$-0000000000000000000000000000000000000000
-00000000000000000000-
-0000000000000000000000000000000000000000 -
b) 0.08 (0000000000000000000000000000000000000000 -00000000000000000000-

- $0000000000000000000000000000000000000000-1$
c) $\frac{45}{100}$ -0000000000000000000000000000000000000000 -00000000000000000000-
- 0000000000000000000000000000000000000000 -
d) $95 \%$
a) What fraction, decimal and percentage of the hundred square is shaded?


Compare answers with a partner.
Did you get the same answers?
Did you simplify any of your answers?
b) Complete the table.

| Quarters | Hundredths | Decimal |
| :---: | :---: | :---: |
| $\frac{1}{4}$ | $\frac{\square}{100}$ |  |
| $\frac{\square}{4}$ | $\frac{50}{100}$ |  |
|  |  | 0.75 |

Use the diagram to help you complete the equivalence statements.

| $100 \%$ |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $50 \%$ |  |  |  | $50 \%$ |  |  |  |  |  |
| $20 \%$ |  | $20 \%$ |  | $20 \%$ |  | $20 \%$ |  | $20 \%$ |  |
| $10 \%$ | $10 \%$ | $10 \%$ | $10 \%$ | $10 \%$ | $10 \%$ | $10 \%$ | $10 \%$ | $10 \%$ |  |
| $10 \%$ |  |  |  |  |  |  |  |  |  |

a) 1 whole $=$ $\square$ \%


$$
\frac{1}{2}=\square \%
$$




b)


5
Filip gets some money for his birthday He spends $\frac{2}{5}$ of his money and saves the rest. What percentage does he save?


6 Dora is doing a school survey.
She compares how many children wear glasses in Class 4 and Class 5

- $\frac{1}{5}$ of the children in Class 4 wear glasses.
- $25 \%$ of the children in Class 5 wear glasses.
- Both classes have the same number of children.

Which class has more children who wear glasses? $\qquad$ Explain your reasoning.
$\qquad$
$\qquad$
7) There are 30 children in Class 5

- $\frac{2}{5}$ have brown hair.
- $50 \%$ have blonde hair.
a) What percentage of children do not have brown or blonde hair?

b) What information did you not need to know to work out the answer?
$\qquad$

8

$$
\frac{1}{4}=25 \%=\frac{25}{100}=\frac{250}{1000}
$$

Use this fact to convert $\frac{1}{8}$ and $\frac{3}{8}$ to decimals.
$\square$

Rosie makes a number on a 100 bead string.

a) What fraction of the bead string is circled?
b) Write the fraction as a decimal
c) Write the decimal as a percentage.

2 Circle the value on each 100 bead string.
a) $70 \%$

-0000000020000000000000000000000000000000
0000000000000000000000000000000000000000 -00000000000000000000-
c) $\frac{45}{100}$

d) $95 \%$
a) What fraction, decimal and percentage of the hundred square is shaded?


Compare answers with a partner.
Did you get the same answers?
Did you simplify any of your answers?
b) Complete the table.

| Quarters | Hundredths | Decimal |
| :---: | :---: | :---: |
| $\frac{1}{4}$ | $\frac{\boxed{25}}{100}$ | 0.25 |
| $\frac{2}{4}$ | $\frac{50}{100}$ | 0.5 |
| $\frac{3}{4}$ | $\frac{75}{100}$ | 0.75 |

$00000000000000060000-$
4.

Use the diagram to help you complete the equivalence statements.

| $100 \%$ |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $50 \%$ |  |  |  | $50 \%$ |  |  |  |  |  |
| $20 \%$ |  | $20 \%$ |  | $20 \%$ |  | $20 \%$ |  | $20 \%$ |  |
| $10 \%$ | $10 \%$ | $10 \%$ | $10 \%$ | $10 \%$ | $10 \%$ | $10 \%$ | $10 \%$ | $10 \%$ | $10 \%$ |

a) 1 whole $=100 \%$

b)

(5)

Filip gets some money for his birthday. He spends $\frac{2}{5}$ of his money and saves the rest. What percentage does he save?

6 Dora is doing a school survey.
She compares how many children wear glasses in Class 4 and Class 5

- $\frac{1}{5}$ of the children in Class 4 wear glasses.
- $25 \%$ of the children in Class 5 wear glasses.
- Both classes have the same number of children.

Which class has more children who wear glasses? dan 5
Explain your reasoning.
$\frac{1}{5}=20 \%$ $25 \%>20 \%$
7) There are 30 children in Class 5

- $\frac{2}{5}$ have brown hair.
- $50 \%$ have blonde hair
a) What percentage of children do not have brown or blonde hair?

$$
10 \%
$$

b) What information did you not need to know to work out the answer?
$\qquad$

8
$\frac{1}{4}=25 \%=\frac{25}{100}=\frac{250}{1000}$

Use this fact to convert $\frac{1}{8}$ and $\frac{3}{8}$ to decimals.
$\square$
$\square$


[^0]:    Compare answers with a partner.

