

Year 6 maths – Week Beginning 1.6.20

| Theme | Fractions | Decimals | Percentages of amounts | Percentage change | Fractions, decimals and percentages |
|---|--|---|--|---|--|
| Factual fluency (to aid fluency) | Compare and order fractions here | Compare and order decimals here | Identify what percent is shown here | Continue to practise finding percentage of amounts here | Compare between fractions, decimals and percentages here |
| <p>Problem/activity of the day</p> <p>Remember, just like in class, you can still show the depth of your knowledge LINK</p> | <p>(Lesson 1 resources below) MAKING LINKS: We learnt how to calculate with fractions in year 4, 5 and 6.</p> <p>THINK: (support below) Explore these statements. Can you prove them true or false? I can add and subtract fractions <u>without</u> finding a common denominator <i>Recap adding fractions here and subtracting fractions here</i></p> <p>To multiply fractions, you need to find a common denominator <i>Recap multiplying fractions here</i></p> <p>Dividing by x is the same as multiplying by $\frac{1}{x}$. For example, $\frac{4}{8} \div 4 = \frac{4}{8} \times \frac{1}{4}$ <i>Recap dividing fractions here</i></p> <p>SEE: (model below) Watch lesson video here</p> <p>DO: Use what you have learned today to solve the problems.</p> | <p>(Lesson 2 resources below) MAKING LINKS: In lesson 1, we learnt how to calculate with fractions. Today we are working with decimals.</p> <p>THINK: (support below) Explore these statements. Can you prove them true or false? Understanding place value is really important when adding and subtracting decimals <i>Recap adding decimals here and subtracting decimals here</i></p> <p>When multiplying decimals, the formal written method does not always work <i>Recap multiplying decimals here</i></p> <p>Multiplication facts help you to divide decimals by whole numbers <i>Recap dividing with decimals here</i></p> <p>SEE: (model below) Watch lesson video here</p> <p>DO: Use what you have learned today to solve the problems.</p> | <p>Lesson 3 resources below) MAKING LINKS: This year, we learnt how to calculate percentages of amounts. Remember to find and use 10% and 1% to help you.</p> <p>THINK: (support below) George thinks that 30% of 120 is easy: you just multiply the number 12 thirty times to get 360. Claire says this is not quite right: you need to multiply 12 three times to get 36. Who is right? Explain why.</p> <p>Can you prove these statements true or false?</p> <p>To find percentages of amounts, you can always use 10% to help you.</p> <p>There is often more than one way to find percentages of amounts. For example, you can find 25% by dividing by 4, by using 10% and 5%, or by using 1%.</p> <p>SEE: (model below) Watch lesson video here</p> <p>DO: Use what you have learned today to solve the problems.</p> | <p>Lesson 4 resources below) MAKING LINKS: Yesterday, we revised how to calculate percentages of amounts.</p> <p>THINK: (support below) The price of a meal at a restaurant has risen by 15%. It used to be £6.00. When the waiter brings my bill, I am cross to see it says £10.00. Am I right to be? Explain why.</p> <p>The price of lunch increased by 20%. It is now £9.60. Find the old price.</p> <p>Can you prove these statements true or false?</p> <p>In order to find percentage change, you'll need draw bar models that are larger than 100%. Working out what one part of the bar model is worth is often the key to solving the problem.</p> <p>SEE: (model below) Watch lesson video here</p> <p>DO: Use what you have learned today to solve the problems.</p> | <p>(Lesson 5 resources below) MAKING LINKS: this week, we revised fractions, decimals and percentages</p> <p>THINK: (support below) Explore these statements. Can you prove them true or false? It is possible to write any decimal as a fraction and a percentage.</p> <p>Most percentages cannot be written as a decimal other than hundredths.</p> <p>Fractions where the denominator is not a factor of 10, 100 or 1000 cannot be written exactly as a decimal.</p> <p>Explore fractions, decimals and percentages here and here</p> <p>SEE: (model below) Watch lesson video here.</p> <p>DO: Use what you have learnt today to solve the problems.</p> |
| Time to check | Day 1 resources and answers (below) | Day 2 resources and answers (below) | Day 3 resources and answers (below) | Day 4 resources and answers (below) | Day 5 resources and answers (below) |

THINK-SEE-DO resources below

DAY 1 RESOURCES:

THINK: Explore these statements. Can you prove them true or false?

I can add and subtract fractions without finding a common denominator. True or false?

To multiply fractions, you need to find a common denominator. True or false?

Dividing by x is the same as multiplying by $\frac{1}{x}$. For example, $\frac{4}{8} \div 4 = \frac{4}{8} \times \frac{1}{4}$. True or false?

SEE: Addition - *Recap adding fractions here or see beginning of lesson video*

$$\frac{1}{4} + \frac{1}{3} = \frac{3}{12} + \frac{4}{12} = \frac{7}{12}$$

| | |
|----|----|
| 3 | 4 |
| 6 | 8 |
| 9 | 12 |
| 12 | 16 |
| 15 | 20 |

$$\frac{1}{4} \xrightarrow{\times 3} \frac{3}{12} \quad \frac{1}{3} \xrightarrow{\times 4} \frac{4}{12}$$

1. Find a common denominator by finding the lowest common multiple
2. Rewrite the calculation so that both fractions have the same denominator
3. Add the fractions (just the numerators)
4. Make sure the answer is in its simplest form

NOTE: this is just one method. You could try others.

Subtraction - *Recap subtracting fractions here or see lesson video*

$$1\frac{1}{2} - \frac{5}{8} = \frac{12}{8} - \frac{5}{8} = \frac{7}{8}$$

| | |
|---|----|
| 2 | 8 |
| 4 | 16 |
| 6 | 24 |
| 8 | |

$$1\frac{1}{2} = \frac{2}{2} + \frac{1}{2} = \frac{3}{2} \xrightarrow{\times 4} \frac{12}{8}$$

1. Convert any mixed number into an improper fraction
5. Find a common denominator by finding the lowest common multiple
2. Rewrite the calculation so that both fractions have the same denominator
3. Find the difference (subtract) (just the numerators)
4. Make sure the answer is in its simplest form

NOTE: this is just one method. You could try others.

Multiplication - *Recap multiplying fractions here or lesson video*

$$\frac{1}{3} \times \frac{2}{5} = \frac{1 \times 2}{3 \times 5} = \frac{2}{15}$$

1. Multiply the numerators together
2. Multiply the denominators together
3. Make sure the answer is in its simplest form

NOTE: this is just one method. You could try others.

Division - *Recap dividing fractions here or lesson video*

$$\frac{1}{2} \div 4 = \frac{1}{8}$$

$$\frac{1}{2} = \frac{4}{8} \text{ so...}$$

$$\frac{4}{8} \div 4 = \frac{1}{8}$$

$$\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$$

1. Find an equivalent fraction with a numerator that you can divide
2. Divide the numerator by the divisor
3. Make sure the answer is in its simplest form

OR USE MULTIPLICATION

Dividing by 2 is the same as multiplying by a half
 Dividing by 3 is the same as multiplying by a third
 Dividing by 4 is the same as multiplying by a quarter
 And so on...

DO:

Addition:

| | | |
|-------------------------------|--|---------------------------------|
| $\frac{2}{3} + \frac{1}{6} =$ | $\frac{1}{12} + \frac{3}{4} =$ | $\frac{1}{2} + \frac{2}{7} =$ |
| $\frac{1}{2} + \frac{2}{5} =$ | $\frac{1}{2} + \frac{1}{10} + \frac{1}{4} =$ | $3\frac{1}{5} + 2\frac{1}{2} =$ |

Subtraction:

| | | |
|---------------------------------|---------------------------------|--------------------------------|
| $\frac{7}{10} - \frac{3}{5} =$ | $\frac{5}{6} - \frac{1}{3} =$ | $\frac{3}{4} - \frac{1}{6} =$ |
| $1\frac{5}{6} - \frac{3}{4} =$ | $1\frac{5}{8} - \frac{1}{3} =$ | $1\frac{7}{8} - \frac{2}{3} =$ |
| $2\frac{2}{3} - 1\frac{4}{9} =$ | $2\frac{1}{2} - 1\frac{1}{7} =$ | $1\frac{5}{6} - \frac{3}{4} =$ |

TOP TIPS

Find a **common denominator** by listing the multiples of both denominators until you find a common one. Whatever you do to the **denominator**, you need to do it to the **numerator** too.

Multiplication:

| | | |
|------------------------------------|------------------------------------|------------------------------------|
| $\frac{1}{2} \times \frac{1}{5} =$ | $\frac{1}{7} \times \frac{1}{3} =$ | $\frac{1}{9} \times \frac{1}{3} =$ |
| $\frac{1}{6} \times \frac{2}{3} =$ | $\frac{1}{4} \times \frac{2}{5} =$ | $\frac{1}{8} \times \frac{4}{7} =$ |

Division:

| | | |
|------------------------|------------------------|-------------------------|
| $\frac{5}{6} \div 5 =$ | $\frac{6}{8} \div 6 =$ | $\frac{9}{10} \div 3 =$ |
| $\frac{6}{7} \div 2 =$ | $\frac{8}{9} \div 4 =$ | $\frac{8}{12} \div 2 =$ |

Remember to **divide the numerator by the divisor**. Keep the **same denominator**.



DAY 2 RESOURCES:

THINK: Explore these statements. Can you prove them true or false?

Understanding place value is really important when adding and subtracting decimals. True or false?
 When multiplying decimals, the formal written method does not always work. True or false?
 Multiplication facts help you to divide decimals by whole numbers. True or false?

SEE: Subtraction and addition *Recap adding decimals [here](#) and subtracting decimals [here](#) or [lesson video](#)*

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|------|--------|------------|-------------|-------------|--|---|---|---|---|---|---|---|---|---|--|--|--|--|--|--|------|------|--------|------------|-------------|--|---|---|---|---|---|---|---|---|---|--|---|---|---|---|
| $2.4 - 0.507 =$ <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr><td style="border-right: 1px solid black; padding: 2px 5px;">tens</td><td style="border-right: 1px solid black; padding: 2px 5px;">ones</td><td style="border-right: 1px solid black; padding: 2px 5px;">tenths</td><td style="border-right: 1px solid black; padding: 2px 5px;">hundredths</td><td style="padding: 2px 5px;">thousandths</td></tr> <tr><td style="border-right: 1px solid black; padding: 2px 5px;"> </td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">2</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">4</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">0</td><td style="padding: 2px 5px; text-align: center;">0</td></tr> <tr><td style="border-right: 1px solid black; padding: 2px 5px;">-</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">0</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">5</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">0</td><td style="padding: 2px 5px; text-align: center;">7</td></tr> <tr><td style="border-right: 1px solid black; padding: 2px 5px;"> </td><td style="border-right: 1px solid black; padding: 2px 5px;"> </td><td style="border-right: 1px solid black; padding: 2px 5px;"> </td><td style="border-right: 1px solid black; padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td></tr> </table> <p style="font-size: small; color: red;">The place holders are in red</p> | tens | ones | tenths | hundredths | thousandths | | 2 | 4 | 0 | 0 | - | 0 | 5 | 0 | 7 | | | | | | $2.4 - 0.507 = 1.893$ <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr><td style="border-right: 1px solid black; padding: 2px 5px;">tens</td><td style="border-right: 1px solid black; padding: 2px 5px;">ones</td><td style="border-right: 1px solid black; padding: 2px 5px;">tenths</td><td style="border-right: 1px solid black; padding: 2px 5px;">hundredths</td><td style="padding: 2px 5px;">thousandths</td></tr> <tr><td style="border-right: 1px solid black; padding: 2px 5px;"> </td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">2</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">4</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">0</td><td style="padding: 2px 5px; text-align: center;">0</td></tr> <tr><td style="border-right: 1px solid black; padding: 2px 5px;">-</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">0</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">5</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">0</td><td style="padding: 2px 5px; text-align: center;">7</td></tr> <tr><td style="border-right: 1px solid black; padding: 2px 5px;"> </td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">1</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">8</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">9</td><td style="padding: 2px 5px; text-align: center;">3</td></tr> </table> <p style="font-size: small; color: red;">Use a written method once the digits are in the correct place</p> | tens | ones | tenths | hundredths | thousandths | | 2 | 4 | 0 | 0 | - | 0 | 5 | 0 | 7 | | 1 | 8 | 9 | 3 |
| tens | ones | tenths | hundredths | thousandths | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 | 4 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - | 0 | 5 | 0 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| tens | ones | tenths | hundredths | thousandths | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 | 4 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - | 0 | 5 | 0 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | 8 | 9 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Place value knowledge is very important when adding and subtracting decimals

You may need place holders to be able to use the written method. This does not change the value of the number.

You could draw yourself a place value grid and make sure the decimal points and places line up

Multiplication- *Recap multiplying decimals [here](#) or [lesson video](#)*

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|------|--------|------------|-------------|-------------|--|---|---|---|--|---|---|---|---|--|--|---|---|----|--|---|---|---|---|---|---|--|--|---|--|--|--|--|---|---|---|---|
| $2.36 \times 3 = 7.08$ <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr><td style="border-right: 1px solid black; padding: 2px 5px;">tens</td><td style="border-right: 1px solid black; padding: 2px 5px;">ones</td><td style="border-right: 1px solid black; padding: 2px 5px;">tenths</td><td style="border-right: 1px solid black; padding: 2px 5px;">hundredths</td><td style="padding: 2px 5px;">thousandths</td></tr> <tr><td style="border-right: 1px solid black; padding: 2px 5px;"> </td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">2</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">3</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">6</td><td style="padding: 2px 5px;"> </td></tr> <tr><td style="border-right: 1px solid black; padding: 2px 5px;">x</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">3</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">3</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">6</td><td style="padding: 2px 5px;"> </td></tr> <tr><td style="border-right: 1px solid black; padding: 2px 5px;"> </td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">6</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">9</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">18</td><td style="padding: 2px 5px;"> </td></tr> </table> <p style="font-size: small; color: red;">6 + 0.9 + 0.18 = 7.08</p> | tens | ones | tenths | hundredths | thousandths | | 2 | 3 | 6 | | x | 3 | 3 | 6 | | | 6 | 9 | 18 | | <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">.</td><td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">6</td></tr> <tr><td style="padding: 2px 5px;">x</td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;">3</td></tr> <tr><td colspan="4" style="border-top: 1px solid black; padding: 2px 5px;"> </td></tr> <tr><td style="padding: 2px 5px;">7</td><td style="padding: 2px 5px;">.</td><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">8</td></tr> </table> <p style="font-size: small;">To begin with, you may want to multiply your number by a power of 10 so that you can calculate using whole numbers (without a decimal point)</p> <p style="font-size: small;">Don't forget to divide the number by the same power of ten after the calculation</p> <p style="font-size: small;">All your usual methods will work as long as you apply your place value knowledge</p> | 2 | . | 3 | 6 | x | | | 3 | | | | | 7 | . | 0 | 8 |
| tens | ones | tenths | hundredths | thousandths | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 | 3 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| x | 3 | 3 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 6 | 9 | 18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | . | 3 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| x | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 7 | . | 0 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Division- *Recap dividing with decimals [here](#) or [lesson video](#)*

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|------|--------|------------|-------------|-------------|---|---|---|---|--|---|---|---|---|--|--|----|--|---|---|---|---|---|--|--|---|---|---|---|---|--|--|--|--|--|--|---|--|--|--|--|--|--|---|--|--|--|--|--|--|---|----|----|----|-----|-----|
| $9.36 \div 3 = 3.12$ <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr><td style="border-right: 1px solid black; padding: 2px 5px;">tens</td><td style="border-right: 1px solid black; padding: 2px 5px;">ones</td><td style="border-right: 1px solid black; padding: 2px 5px;">tenths</td><td style="border-right: 1px solid black; padding: 2px 5px;">hundredths</td><td style="padding: 2px 5px;">thousandths</td></tr> <tr><td style="border-right: 1px solid black; padding: 2px 5px;"> </td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">9</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">3</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">6</td><td style="padding: 2px 5px;"> </td></tr> <tr><td style="border-right: 1px solid black; padding: 2px 5px;">÷</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">3</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">1</td><td style="border-right: 1px solid black; padding: 2px 5px; text-align: center;">2</td><td style="padding: 2px 5px;"> </td></tr> </table> | tens | ones | tenths | hundredths | thousandths | | 9 | 3 | 6 | | ÷ | 3 | 1 | 2 | | $12.6 \div 28 = 126 \div 28 + 10 = 4.5 + 10 = 0.45$ <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr><td style="padding: 2px 5px;">28</td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">6</td><td style="padding: 2px 5px;">.</td><td style="padding: 2px 5px;">0</td></tr> <tr><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;">-</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">1</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">.</td></tr> <tr><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;">0</td></tr> <tr><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;">0</td></tr> <tr><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;"> </td><td style="padding: 2px 5px;">0</td></tr> </table> <div style="margin-left: 20px; font-size: small; color: green;"> <table style="border: 1px solid black; padding: 2px;"> <tr><td>28</td></tr> <tr><td>56</td></tr> <tr><td>84</td></tr> <tr><td>112</td></tr> <tr><td>140</td></tr> </table> </div> <p style="font-size: small;">You may want to multiply your number by a power of 10 so that you can calculate using whole numbers (without a decimal point)</p> <p style="font-size: small;">Long division: Put in a place holder so that you can continue calculating until there is no remainder</p> <p style="font-size: small;">Challenge yourself to think of your remainder and work out what that would be as a decimal?</p> | 28 | | 1 | 2 | 6 | . | 0 | | | - | 1 | 1 | 2 | . | | | | | | | 0 | | | | | | | 0 | | | | | | | 0 | 28 | 56 | 84 | 112 | 140 |
| tens | ones | tenths | hundredths | thousandths | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 9 | 3 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ÷ | 3 | 1 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | | 1 | 2 | 6 | . | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | - | 1 | 1 | 2 | . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 56 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 84 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 112 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 140 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

DO:
Addition and subtraction

| | | |
|-----------------|-----------------|-----------------|
| $2.70 + 1.01 =$ | $5.09 + 2.90 =$ | $0.57 + 9.95 =$ |
| $1.35 + 0.80 =$ | $1.02 + 2.3 =$ | $1.90 + 0.53 =$ |
| $2.29 - 1.43 =$ | $2.54 - 1.06 =$ | $3.11 - 1.50 =$ |
| $6.13 - 0.04 =$ | $5.42 - 1.96 =$ | $3.24 - 1.25 =$ |

Multiplication

| | | |
|--------------------|-------------------|-------------------|
| $1.01 \times 7 =$ | $2.31 \times 3 =$ | $3.12 \times 3 =$ |
| $0.12 \times 5 =$ | $0.64 \times 2 =$ | $4.25 \times 3 =$ |
| $2.13 \times 4 =$ | $1.42 \times 3 =$ | $6.57 \times 2 =$ |
| $0.53 \times 10 =$ | $0.7 \times 30 =$ | $0.6 \times 20 =$ |

TOP TIPS FOR MULTIPLYING AND DIVIDING

A place value grid will help you when $\times 10$, $\times 100$ or $\div 10$, $\div 100$.
 Multiply your number by $\times 10$ or $\times 100$ so that you can calculate using whole numbers (without a decimal point).
 Don't forget to divide the number by the same power of ten ($\div 10$, $\div 100$) after the calculation to put the decimal point back.

Division

| | | |
|-----------------|------------------|------------------|
| $9.6 \div 3 =$ | $10.05 \div 5 =$ | $12.48 \div 4 =$ |
| $3.24 \div 2 =$ | $6.57 \div 3 =$ | $9.72 \div 4 =$ |
| $6.9 \div 23 =$ | $2.04 \div 34 =$ | $4.83 \div 21 =$ |

DAY 3 RESOURCES:

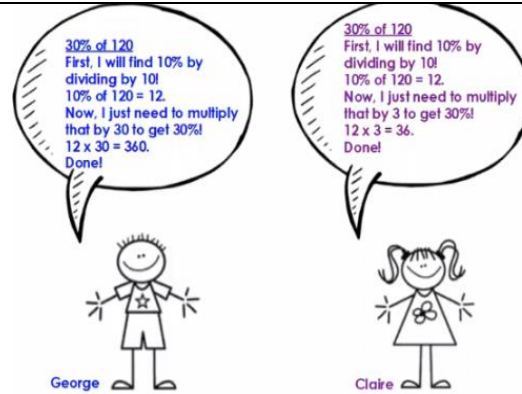
THINK

George thinks that 30% of 120 is easy: you just multiply the number 12 thirty times to get 360. Claire says this is not quite right: you need to multiply 12 three times to get 36. Who is right? Explain why.

Can you prove these statements true or false?

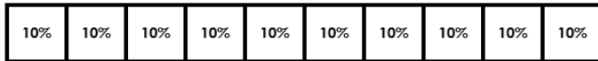
To find percentages of amounts, you can always use 10% to help you.

Finding a percentage of an amount is the same as finding a fraction of an amount. For example, 25% of 100 is the same as $\frac{1}{4}$ of 100.

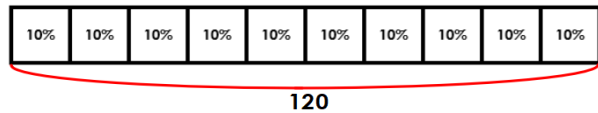


SEE:

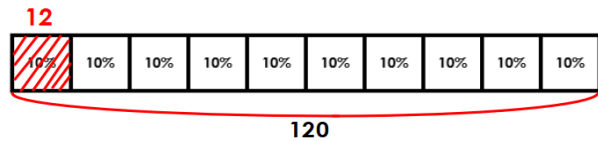
Start by drawing a bar model, representing 100% or 1 whole. Divide your bar model into 10 equal pieces, which each represent 10%.



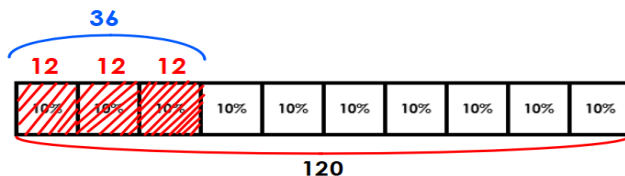
Next, show that 100%, or the whole, is 120 (as you can see in the question)



Work out that 10% of 120 = 12. The way you do this is by dividing 120 by 10 = 12



To find 30%, shade 3 of the boxes. Each box is worth 10%, which is 12 in this example. Multiply 12 by 3 to get 36. So 30% of 120 is 36.



DO:

Solve these questions about percentages of amounts:

- 1.) 10% of 50 =
- 2.) 30% of 120 =
- 3.) 60% of 3000 =
- 4.) 70% of 650 =
- 5.) 15% of 60 =
- 6.) 25% of 120 =
- 7.) 65% of 520 =
- 8.) 75% of 200 =

TOP TIP

To work out 5%, work out 10% first, and then $\div 2$ your answer.

The table below shows what activity children enjoyed most during lockdown. A total of 500 children were surveyed.

| Type of activity | Percentage |
|-----------------------|------------|
| Reading | 35% |
| Going to the park | 10% |
| The Great 8 Challenge | 55% |

- 1.) How many children liked reading most?
- 2.) How many children liked going to the park most?

Solve these questions. Show your working.

- 1.) A shop sells 200 chocolate, vanilla and strawberry ice cream. 42 of the ice creams sold are vanilla, and $\frac{1}{4}$ are strawberry. What percentage are chocolate?
- 2.) In a fruit survey, 300 children chose their favourite fruit out of apples, bananas and watermelon. 150 chose apples and 90 chose bananas. What number chose watermelon? What percentage chose watermelon?
- 3.) Out of the 250 million cars on the road in the UK, about $\frac{1}{25}$ are red.
 - a. What percentage were red?
 - b. How many are red?
 - c. What percentage are not red?

TOP TIPS

Cover the fraction given into a fraction with 100 as the denominator. Remember that whatever you do to the **denominator**, you need to do it to the **numerator** too.

DAY 4 RESOURCES:

THINK:

The price of a meal at a restaurant has risen by 15%. It used to be £6. When the waiter brings my bill, I am cross to see it says £10.00. Am I right to be? Explain why.

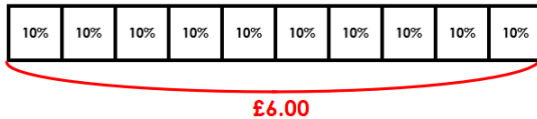
The price of lunch increased by 20%. It is now £9.60. Find the old price.

Can you prove this statements true or false?

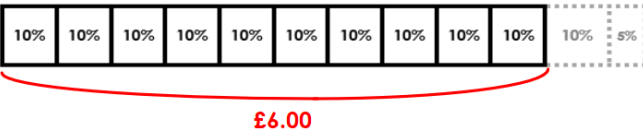
In order to find percentage change, you'll need draw bar models that are larger than 100%.

SEE:

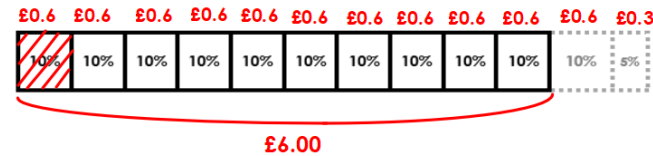
Start by drawing a bar model with 10 equal pieces that represents 100%, or the old price of £6.00.



Because the 15% is an increase, add on a couple of bars to represent 15% (One to represent 10%, and one that is half that size, to represent 5%)



Work out what 10% of £6.00 is by dividing £6 by 10, which is 60p. Then you can put that value on all of the pieces of the bar that are worth 10%. To work out 5%, half 10%. Half of 60p is 30p.



Finally, you can add the original amount (£6) to the additional 15% (60p and 30p). $£6 + £0.6 + £0.3 = £6.9$. Therefore, we know the bill is incorrect. After a 15% price increase, the new price should be £6.90, not £10.

For this type of question, "The price of lunch increased by 20%. It is now £9.60. Find the old price" remember your bar model will include the additional 20%.

120 % (or 12 bars) is £9.60.

Use £9.60 divided by 12 to help you find 1 bar and then work out the original price (10 bars or 100%)

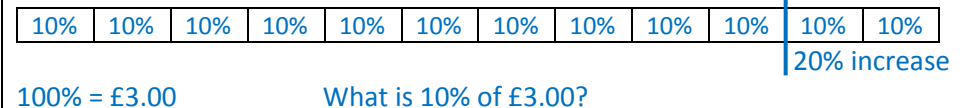
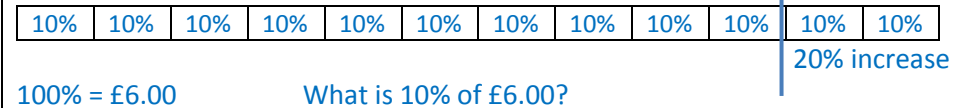
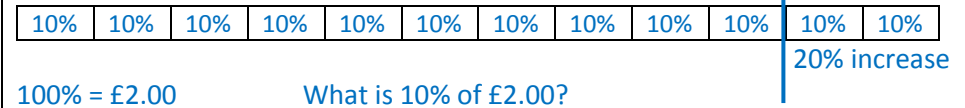
DO:

Draw bar models and show your working to solve the following problems:

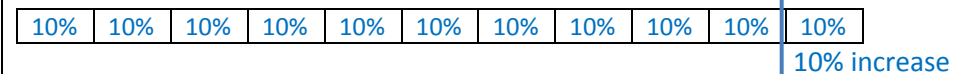
- Sally wants to increase the price of the food in her café by 20%. Find the new prices of these items.



These bars might be helpful.



- The price of a concert ticket has increased by 10%. It now costs £220. What was the price of the ticket before the price rose?



How many units are there in the whole bar now?

What is the value of one the pieces of the bar?

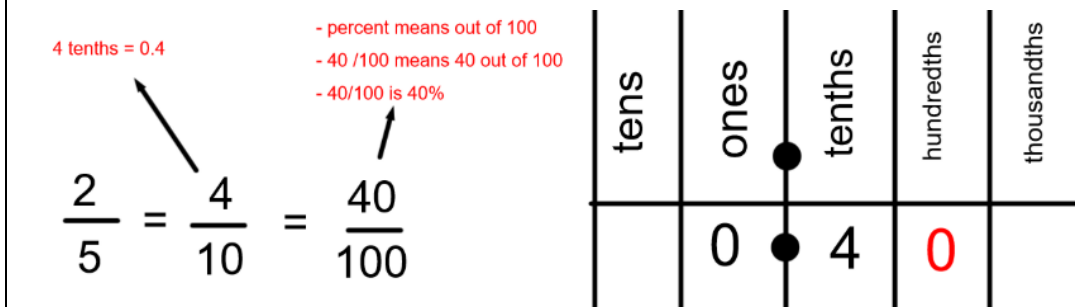
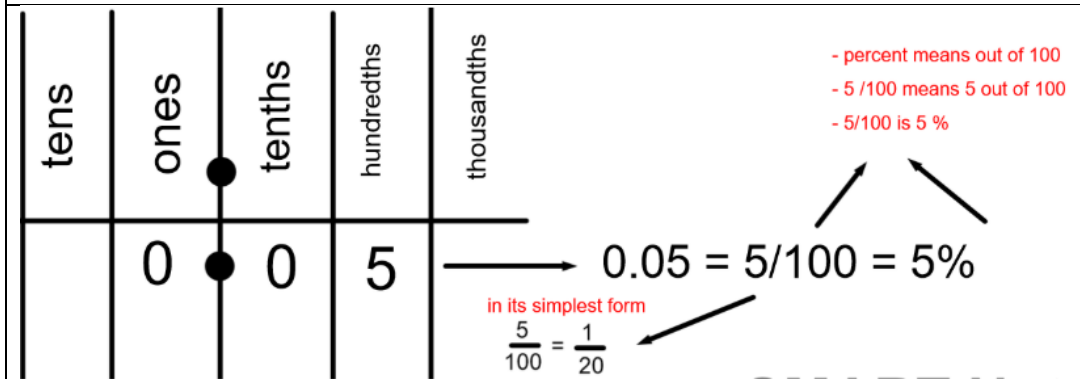
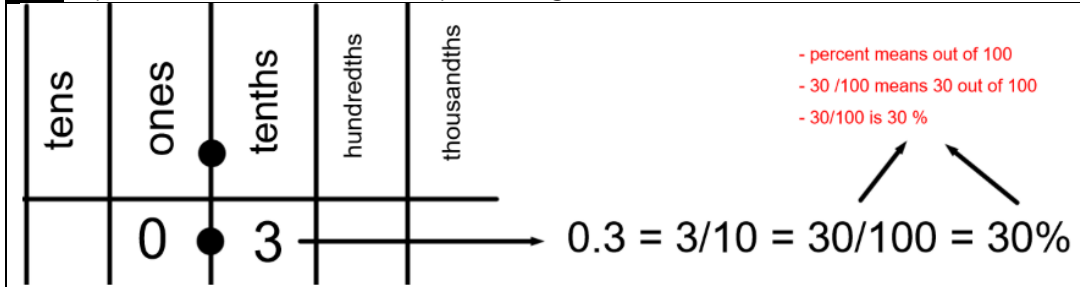
Will the price of the ticket before the price rose be more or less than £220?

DAY 5 RESOURCES:

THINK: Explore these statements. Can you prove them true or false?

It is possible to write any decimal as a fraction and a percentage. True or false?
 Most percentages cannot be written as a decimal other than hundredths. True or false?
 Fractions where the denominator is not a factor of 10, 100 or 1000 cannot be written exactly as a decimal. True or false?

SEE: Explore fractions, decimals and percentages [here](#) and [here](#) or see [lesson video](#)



DO:

1. Which two amounts are equal?

$\frac{7}{8}$ 90% $\frac{88}{1,000}$ 88% $\frac{9}{100}$ 0.009 0.088 0.7 0.78

2. Order these amounts from smallest to greatest.

57% $\frac{3}{10}$ $\frac{17}{25}$ 61% 0.55 0.62 $\frac{41}{50}$

TOP TIPS
 Remember that percent means out of 100.
 Convert your amounts into fractions with 100 as a denominator.
 Use a place value grid when $\div 10$, $\div 100$.

3. Fill in the missing values

0.6 % $\frac{7}{10}$

35% 0. $\frac{37}{100}$

0 %

TIPS: Halfway between 0 and 1 is 0.5.
 Halfway between 1 and 2 is 1.50.

ANSWERS:

Lesson 1 Answers

Addition:

| | | |
|--|--|---|
| $\frac{2}{3} + \frac{1}{6} = \frac{5}{6}$ | $\frac{1}{12} + \frac{3}{4} = \frac{10}{12} = \frac{5}{6}$ | $\frac{1}{2} + \frac{2}{7} = \frac{11}{14}$ |
| $\frac{1}{2} + \frac{2}{5} = \frac{9}{10}$ | $\frac{1}{2} + \frac{1}{10} + \frac{1}{4} = \frac{17}{20}$ | $3\frac{1}{5} + 2\frac{1}{2} = 5\frac{7}{10}$ |

Subtraction

| | | |
|--|---|--|
| $\frac{7}{10} - \frac{3}{5} = \frac{1}{10}$ | $\frac{5}{6} - \frac{1}{3} = \frac{3}{6} = \frac{1}{2}$ | $\frac{3}{4} - \frac{1}{6} = \frac{7}{12}$ |
| $1\frac{5}{6} - \frac{3}{4} = 1\frac{1}{12}$ | $1\frac{5}{8} - \frac{1}{3} = 1\frac{7}{24}$ | $1\frac{7}{8} - \frac{2}{3} = 1\frac{5}{24}$ |
| $2\frac{2}{3} - 1\frac{4}{9} = 1\frac{2}{9}$ | $2\frac{1}{2} - 1\frac{1}{7} = 1\frac{5}{14}$ | $1\frac{5}{6} - \frac{3}{4} = 1\frac{1}{12}$ |

Multiplication:

| | | |
|---|--|--|
| $\frac{1}{2} \times \frac{1}{5} = \frac{1}{10}$ | $\frac{1}{7} \times \frac{1}{3} = \frac{1}{21}$ | $\frac{1}{9} \times \frac{1}{3} = \frac{1}{27}$ |
| $\frac{1}{6} \times \frac{2}{3} = \frac{2}{18} = \frac{1}{9}$ | $\frac{1}{4} \times \frac{2}{5} = \frac{2}{20} = \frac{1}{10}$ | $\frac{1}{8} \times \frac{4}{7} = \frac{4}{56} = \frac{1}{14}$ |

Division:

| | | |
|------------------------------------|------------------------------------|--|
| $\frac{5}{6} \div 5 = \frac{1}{6}$ | $\frac{6}{8} \div 6 = \frac{1}{8}$ | $\frac{9}{10} \div 3 = \frac{3}{10}$ |
| $\frac{6}{7} \div 2 = \frac{3}{7}$ | $\frac{8}{9} \div 4 = \frac{2}{9}$ | $\frac{8}{12} \div 2 = \frac{4}{12} = \frac{1}{3}$ |

Lesson 2. Answers

Adding and subtracting

| | | |
|----------------------|----------------------|-----------------------|
| $2.7 + 1.01 = 3.71$ | $5.09 + 2.9 = 7.99$ | $0.57 + 9.95 = 10.52$ |
| $1.35 + 0.8 = 2.15$ | $1.02 + 2.3 = 3.32$ | $1.9 + 0.53 = 2.43$ |
| $2.29 - 1.43 = 0.86$ | $2.54 - 1.06 = 1.48$ | $3.11 - 1.5 = 1.61$ |
| $6.03 - 0.04 = 5.99$ | $5.42 - 1.96 = 3.46$ | $3.24 - 1.25 = 1.99$ |

Multiplication

| | | |
|------------------------|------------------------|-------------------------|
| $1.01 \times 7 = 7.07$ | $2.31 \times 3 = 6.93$ | $3.12 \times 3 = 9.36$ |
| $0.12 \times 5 = 0.6$ | $0.64 \times 2 = 1.28$ | $4.25 \times 3 = 12.75$ |
| $2.13 \times 4 = 8.52$ | $1.42 \times 3 = 4.26$ | $6.57 \times 2 = 13.14$ |
| $0.53 \times 10 = 5.3$ | $0.7 \times 30 = 21$ | $0.6 \times 20 = 12$ |

Division

| | | |
|----------------------|-----------------------|-----------------------|
| $9.6 \div 3 = 3.2$ | $10.05 \div 5 = 2.01$ | $12.48 \div 4 = 3.12$ |
| $3.24 \div 2 = 1.62$ | $6.57 \div 3 = 2.19$ | $9.72 \div 4 = 2.43$ |
| $6.9 \div 23 = 0.3$ | $2.04 \div 34 = 0.06$ | $4.83 \div 21 = 0.23$ |

Day 3 Answers

Solve these questions about percentages of amounts:

- 5.) 10% of 50 = 5 9.) 15% of 60 = 9
6.) 30% of 120 = 36 10.) 25% of 120 = 30
7.) 60% of 3000 = 1800 11.) 65% of 520 = 338
8.) 70% of 650 = 455 12.) 75% of 200 = 150

The table below shows what activity children enjoyed most during lockdown. A total of 500 children were surveyed.

| Type of activity | Percentage |
|-----------------------|------------|
| Reading | 35% |
| Going to the park | 10% |
| The Great 8 Challenge | 55% |

- How many children liked reading most? 175 children
- How many children liked going to the park most? 50 children

Solve these questions. Show your working.

- A shop sells 200 chocolate, vanilla and strawberry ice cream. 42 of the ice creams sold are vanilla, and $\frac{1}{4}$ are strawberry. What percentage are chocolate? 54% are chocolate.
- In a fruit survey, 300 children chose their favourite fruit out of apples, bananas and watermelon. 150 chose apples and 90 chose bananas. What number chose watermelon? What percentage chose watermelon? 60 children or 20% chose watermelon.
- Out of the 250 million cars on the road in the UK, about $\frac{1}{25}$ are red.
 - What percentage were red? $\frac{1}{25} = \frac{4}{100} = 4\%$.
 - How many are red? 10 million are red
 - What percentage are not red? 96% are not red

Day 4 Answers

Draw bar models and show your working to solve the following problems:

- Sally wants to increase the price of the food in her café by 20%. Find the new prices of these items.
£2.00 → £2.40 £6.00 → £7.20 £3.00 → £3.60
- The price of a concert ticket has increased by 10%. It now costs £220. What was the price of the ticket before the price rose? £200.

Day 5 Answers

- $\frac{88}{1000} = 0.088$
- $\frac{3}{10} < 0.55 < 57\% < 61\% < 0.62 < \frac{17}{25} < \frac{41}{50}$
- 65%
 - 0.36
 - $\frac{5}{1000}$

