Can you still... multiply numbers mentally and identify multiples?

Today, you will be practising your times tables knowledge and looking at different relationships between different multiples.

What is a multiple?
The product of one number multiplied by another. A multiple of a number can be divided by that number without a remainder.
E.g.
Multiples of 4 = 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48
Multiples of 8 = 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, 96

For starters
Are all multiples of 8 multiples of 4? Are all multiples of 4 multiples of 8?
Explain to an adult what you notice.

Next, look at the first 12 multiples of 5:
5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60
What do you notice? What is the same? What is different?
Think about the multiples of other numbers. Is there a pattern that links them?

In your book...

1. Write down the first twelve multiples of nine.
2. Calculate the first five multiples of the following numbers...
3. Write all of the multiples of 3 that are between 15 and 30.
4. Write all of the multiples of 7 that are between 20 and 40.
5. Write all of the multiples of 11 that are under 50.
6. Write 7 multiples of 5 that are higher than 40.
7. What is the eighth multiple of twelve?
8. What is the ninth multiple of 4?
9. Write down all of the even multiples of five that are below 50.
Common multiples

Common multiples are multiples that are shared by two or more numbers. If two numbers have a multiple that is the same we say that they are ‘common multiples’.
E.g. The common multiples of 4 and 8 have been circled:
4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48

In your book...

Going Deeper...
Write all the common multiples of 3 and 5 that are less than 36.
Write all the common multiples of 3 and 8 that are less than 50.

Going Deeper...

1. What type of diagram is this?
2. Organise the following numbers into the diagram.

<table>
<thead>
<tr>
<th>3</th>
<th>5</th>
<th>15</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>24</td>
<td>20</td>
<td>9</td>
</tr>
<tr>
<td>27</td>
<td>6</td>
<td>40</td>
<td>36</td>
</tr>
<tr>
<td>13</td>
<td>25</td>
<td>18</td>
<td>26</td>
</tr>
<tr>
<td>12</td>
<td>33</td>
<td>35</td>
<td>21</td>
</tr>
</tbody>
</table>

Going Deeper...
Eva’s age is a multiple of 7 and is 3 less than a multiple of 8.
She is younger than 40 years old.

How old is Eva?
Can you still... identify factors and factor pairs?

Today, you will be practising your times tables knowledge and looking at different relationships between different multiples.

What is a factor?

Factors are numbers that divide exactly into another number (with no remainder).

Factors are closely linked to multiples—but don’t get them mixed up!

\[ \text{factor} \times \text{factor} = \text{multiple} \]

Therefore... 4 and 3 are factors of 12.

12 is a multiple of 4 and a multiple of 3.

Factors of a number multiply together to give that number, therefore factors always come in pairs. 4 and 3 is a factor pair of 12.

For starters

You could visit the BBC Bitesize What are factors? page. Watch the short video and complete the activity to get warmed up.

In your book...

<table>
<thead>
<tr>
<th>1. What are all the factors of 18?</th>
<th>2. What are all the factors of 24?</th>
<th>3. What are all the factors of 36?</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. What are all the factor pairs of 28?</td>
<td>5. What are all the factor pairs of 64?</td>
<td>6. What are all the factor pairs of 48?</td>
</tr>
</tbody>
</table>

Going Deeper...

List the factors of the following numbers. What do you notice?

| 11 | 13 | 17 | 19 | 23 |
Copy and complete the equations to find the factors.

<table>
<thead>
<tr>
<th>3 ( \times ) [ ] and [ ] = 18 therefore... are factors of 18.</th>
<th>4 ( \times ) [ ] and [ ] = 28 therefore... are factors of 28.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 ( \div ) 3 = [ ] therefore... [ ] and [ ] are factors of 6.</td>
<td>20 ( \div ) 5 = [ ] therefore... [ ] and [ ] are factors of 20.</td>
</tr>
</tbody>
</table>

Now, have a go at finding common factors.

<table>
<thead>
<tr>
<th>1. What are the common factors of 8 and 12?</th>
<th>2. What are the common factors of 12 and 16?</th>
<th>3. What are the common factors of 10 and 20?</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. What are the highest common factors of 10 and 20?</td>
<td>5. What are the highest common factors of 24 and 36?</td>
<td>6. What are the highest common factors of 45 and 60?</td>
</tr>
</tbody>
</table>

**Going Deeper...**
Isaac says: “I have circled all of the factors of 32”.

8 1 32 7 16 15 4 6 2

Is he correct? Explain your reasoning.

**Going Deeper...**
Tick the numbers that are common factors of both 12 and 18.

2 [ ] 9 [ ]
3 [ ] 12 [ ]
6 [ ] 15 [ ]

**Going Deeper...**
Sally says: “Factors come in pairs so all numbers have an even number of factors.”
Do you agree or disagree? Explain your reasoning using evidence.
Recognise square numbers?

**Square numbers** can be represented using square arrays.

The little $^2$ means 'squared'.

$3^2 = 3 \times 3 = 9$

We write the $^2$ just on the shoulder of the number we are squaring (this is called superscript).

It just means 'this number multiplied by itself'.

Therefore...

**Square number**: The product of a number multiplied by itself.

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**In your book...**

Copy and complete the table below:

<table>
<thead>
<tr>
<th>$n^2$</th>
<th>$1 \times 1$</th>
<th>1</th>
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</thead>
<tbody>
<tr>
<td>$1^2$</td>
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<td>1</td>
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<td>$5^2$</td>
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<td>16</td>
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<td>$6^2$</td>
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<td>36</td>
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<td>$7^2$</td>
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<td>$7 \times 7$</td>
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<td>$8^2$</td>
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<td>$9^2$</td>
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<td>$10^2$</td>
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</tbody>
</table>
Going deeper
Copy and complete:

1. \(8^2 = 100 - \square\)
2. \(5^2 = 75 - \square\)
3. \(6^2 = 24 + \square\)
4. \(6^2 + 7^2 = \square\)
5. \(\square^2 = 125 - 61\)
6. Complete using <, > or =
   \(11^2 \square 10 \times 12\)

Going deeper
Whitney thinks that \(4^2\) is equal to 16.
Do you agree?
Convince me!

Amir thinks that \(6^2\) is equal to 12.
Do you agree?
If not, what mistake do you think Amir has made?

Going deeper
Always, sometimes or never?
‘A square number has an even number of factors.’
Can you still... recognise prime numbers, composite numbers and find prime numbers up to 100?

**Prime numbers** are whole numbers, greater than 1, that have exactly two factors - 1 and the number itself.

**What about all those numbers that aren't prime?**

Whole numbers that have more than two factors are called **composite numbers**.

**Quick check:**

Explain why 27 isn't a prime number.

27 is not a prime number because it has more than two factors:

Although 1 and 27 are factors but so are 3 and 9.

**For starters**

You might want to visit the BBC Bitesize ‘What are prime numbers?’ page to get warmed up. Watch the video and complete the activity to get your maths juices flowing.

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You will need to copy the following 100 square into your book (notice that 1 isn't included).

This is one time where it will be ok to have more than one digit in each square!

If you have a printer at home, you could cut out the 100 square on the next page and stick it in.
Thursday 8.4.20

Can you still... recognise prime numbers, composite numbers and find prime numbers up to 100?

<table>
<thead>
<tr>
<th></th>
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<th>3</th>
<th>4</th>
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<td>97</td>
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<td>99</td>
</tr>
</tbody>
</table>

Instructions:

1. Cross out all of the multiples of 2 (except 2) e.g. 4, 6, 8 etc.
2. Cross out all of the multiples of 3 (except 3) e.g. 5, 9, 12 etc.
3. Cross out all of the multiples of 5 (except 5) e.g. 5, 10, 15 etc.
4. Cross out all of the multiples of 7 (except 7) e.g. 7, 14, 21 etc.
5. Colour in the squares that are left. These are all prime numbers!

Going deeper

Why don't you need to find the multiples of 4, 6, 8 or 9?

Why isn't 1 a prime number?
Thursday 8.4.20

Can you still... recognise prime numbers, composite numbers and find prime numbers up to 100?

**Going Deeper...**
Copy the table and sort the numbers into the correct box.

<p>| | | | | | | | |</p>
<table>
<thead>
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<td>29</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prime</th>
<th>Composite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exactly 2 factors (1 and itself)</td>
<td></td>
</tr>
<tr>
<td>More than 2 factors</td>
<td></td>
</tr>
</tbody>
</table>

Add some of your own numbers to the table. Explain why two of the boxes are empty.

**Going Deeper...**

**What number am I?**
I am a prime number. I am a 2 digit number. Both my digits are the same. Explain why there is only one option.