Week 11, Day 1
Multiply and divide numbers mentally drawing on known facts.
Each day covers one maths topic. It should take you about 1 hour or just a little more.

1. If possible, watch the PowerPoint presentation with a teacher or another grown-up.

OR start by carefully reading through the Learning Reminders.

2. Tackle the questions on the Practice Sheet. There might be a choice of either Mild (easier) or Hot (harder)! Check the answers.

3. Finding it tricky? That’s OK... have a go with a grown-up at A Bit Stuck?

4. Think you’ve cracked it? Whizzed through the Practice Sheets? Have a go at the Investigation...

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Learning Reminders

Multiply and divide numbers mentally drawing on known facts.

10 × 46 = 460

We can use this fact to work out other facts mentally.

5 × 46 = 230

That’s half of 230.

20 × 46 = 920

That’s double 230.

15 × 46 = 690

That’s (10 × 46) + (5 × 46).

21 × 46 = 966

That’s (20 × 46) + 46.
Learning Reminders

Multiply and divide numbers mentally drawing on known facts.

20 \times 6 = 120
30 \times 6 = 180
20 \times 7 =
30 \times 7 =
20 \times 8 =
30 \times 8 =

We can use times tables facts and place value to find multiples of 10. For example we know 2 \times 6 = 12, so 20 \times 6 = 120.

We know 3 \times 6 = 180, so 30 \times 6 = 180.

Check the other answers in this way.

Answers:
3 \times 8 = 24
24 \times 8 = 192
3 \times 7 = 21
30 \times 7 = 210
2 \times 8 = 16
20 \times 8 = 160
2 \times 7 = 14
20 \times 7 = 140

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## Learning Reminders

Multiply and divide numbers mentally drawing on known facts.

<table>
<thead>
<tr>
<th>20 × 6</th>
<th>= 120</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 × 6</td>
<td>= 180</td>
</tr>
<tr>
<td>20 × 7</td>
<td>= 140</td>
</tr>
<tr>
<td>30 × 7</td>
<td>= 210</td>
</tr>
<tr>
<td>20 × 8</td>
<td>= 160</td>
</tr>
<tr>
<td>30 × 8</td>
<td>= 240</td>
</tr>
</tbody>
</table>

We can use these answers to help with division.

- **20 × 6 = 120**
  - We know that 20 × 6 = 120 so 123 ÷ 6 = 20 r 3 or 20½.

- **30 × 6 = 180**
  - We know that 30 × 8 = 240 so 244 ÷ 8 = 30 r 4 or 30½.

- **20 × 7 = 140**
  - We know that 20 × 7 = 140. 154 is 14 more than 140 so 154 ÷ 7 = 22.
Practice Sheet Mild
Using known facts to help with divisions

Work out 10 × 6, 20 × 6, 30 × 6, 10 × 7, 20 × 7, 30 × 7, 10 × 8, 20 × 8 and 30 × 8.

Use these facts to help calculate the exact answers to these divisions. Write remainders as fractions.

1. 69 ÷ 6
2. 129 ÷ 6
3. 77 ÷ 7
4. 147 ÷ 7
5. 88 ÷ 8
6. 164 ÷ 8
7. 122 ÷ 6
8. 242 ÷ 8
9. 209 ÷ 7
10. 183 ÷ 6

Make up your own divisions that you can solve using the nine multiplication facts that you found at the beginning.
Practice Sheet Hot
Using known facts to help with divisions

Work out \(20 \times 6, 30 \times 6, 40 \times 6, 20 \times 7, 30 \times 7, 40 \times 7, 20 \times 8, 30 \times 8\) and \(40 \times 8\).

Use these facts to help calculate the exact answers to these divisions. Write remainders as fractions.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>(129 \div 6)</td>
</tr>
<tr>
<td>2.</td>
<td>(147 \div 7)</td>
</tr>
<tr>
<td>3.</td>
<td>(164 \div 8)</td>
</tr>
<tr>
<td>4.</td>
<td>(122 \div 6)</td>
</tr>
<tr>
<td>5.</td>
<td>(162 \div 8)</td>
</tr>
<tr>
<td>6.</td>
<td>(166 \div 8)</td>
</tr>
<tr>
<td>7.</td>
<td>(183 \div 6)</td>
</tr>
<tr>
<td>8.</td>
<td>(224 \div 7)</td>
</tr>
<tr>
<td>9.</td>
<td>(244 \div 8)</td>
</tr>
<tr>
<td>10.</td>
<td>(255 \div 6)</td>
</tr>
<tr>
<td>11.</td>
<td>(287 \div 7)</td>
</tr>
<tr>
<td>12.</td>
<td>(332 \div 8)</td>
</tr>
</tbody>
</table>

Make up your own divisions that you can solve using the nine multiplication facts that you found at the beginning.
### Using known facts to help with divisions (mild)

<table>
<thead>
<tr>
<th>Calculation</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>$10 \times 6$</td>
<td>60</td>
</tr>
<tr>
<td>$20 \times 6$</td>
<td>120</td>
</tr>
<tr>
<td>$30 \times 6$</td>
<td>180</td>
</tr>
<tr>
<td>$10 \times 7$</td>
<td>70</td>
</tr>
<tr>
<td>$20 \times 7$</td>
<td>140</td>
</tr>
<tr>
<td>$30 \times 7$</td>
<td>210</td>
</tr>
<tr>
<td>$10 \times 8$</td>
<td>80</td>
</tr>
<tr>
<td>$20 \times 8$</td>
<td>160</td>
</tr>
<tr>
<td>$30 \times 8$</td>
<td>240</td>
</tr>
</tbody>
</table>

1. $69 \div 6 = 11 \frac{1}{2}$ or $11 \frac{1}{2}$
2. $129 \div 6 = 21 \frac{3}{6}$ or $21 \frac{1}{2}$
3. $77 \div 7 = 11$
4. $147 \div 7 = 21$
5. $88 \div 8 = 11$
6. $164 \div 8 = 20 \frac{4}{8}$ or $20 \frac{1}{2}$
7. $122 \div 6 = 20 \frac{2}{3}$ or $20 \frac{1}{3}$
8. $242 \div 8 = 30 \frac{2}{8}$ or $30 \frac{1}{4}$
9. $209 \div 7 = 29 \frac{5}{6}$
10. $183 \div 6 = 30 \frac{3}{6}$ or $30 \frac{1}{2}$

### Using known facts to help with divisions (hot)

<table>
<thead>
<tr>
<th>Calculation</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>$20 \times 6$</td>
<td>120</td>
</tr>
<tr>
<td>$30 \times 6$</td>
<td>180</td>
</tr>
<tr>
<td>$40 \times 6$</td>
<td>240</td>
</tr>
<tr>
<td>$20 \times 7$</td>
<td>140</td>
</tr>
<tr>
<td>$30 \times 7$</td>
<td>210</td>
</tr>
<tr>
<td>$40 \times 7$</td>
<td>280</td>
</tr>
<tr>
<td>$20 \times 8$</td>
<td>160</td>
</tr>
<tr>
<td>$30 \times 8$</td>
<td>240</td>
</tr>
<tr>
<td>$40 \times 8$</td>
<td>320</td>
</tr>
</tbody>
</table>

1. $129 \div 6 = 21 \frac{3}{6}$ or $21 \frac{1}{2}$
2. $147 \div 7 = 21$
3. $164 \div 8 = 20 \frac{4}{8}$ or $20 \frac{1}{2}$
4. $122 \div 6 = 20 \frac{2}{3}$ or $20 \frac{1}{3}$
5. $162 \div 8 = 20 \frac{2}{8}$ or $20 \frac{1}{4}$
6. $166 \div 8 = 20 \frac{2}{8}$ or $20 \frac{1}{4}$
7. $183 \div 6 = 30 \frac{3}{6}$ or $30 \frac{1}{2}$
8. $224 \div 7 = 32$
9. $244 \div 8 = 30 \frac{4}{8}$ or $30 \frac{1}{2}$
10. $255 \div 6 = 42 \frac{3}{8}$ or $42 \frac{1}{2}$
11. $287 \div 7 = 41$
12. $332 \div 8 = 41 \frac{4}{8}$ or $41 \frac{1}{2}$

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Work in pairs

Things you will need:
• A set of 1 to 10 cards

What to do:
• Shuffle a pack of 1 to 10 cards. Place face down.
• Turn over the cards one at a time and multiply by 60. Use the matching 6x table fact and multiply by 10. The first person to say the correct answer keeps the card.
• How many cards did you each win?
• Repeat for multiplying by 80.

S-t-r-e-t-c-h:
Write some division facts for the 60 times table.

Learning outcomes:
• I know most facts for the 6 and 8 times tables by heart.
• I can use knowledge of the 6 and 8 times tables and place value to work out multiples of 60 and 80.
• I am beginning to use division facts for the 6 times table to work out division facts for multiples of 60.
Investigation
Remaining Remainders

- Solve these questions mentally, writing any remainders as fractions

\[ 25 \div 2 \quad 37 \div 4 \quad 56 \div 5 \quad 301 \div 3 \quad 631 \div 6 \quad 91 \div 5 \]

- What do you notice about the answers?
- Write four more divisions that have a similar result.

Now try these:

\[ 27 \div 4 \quad 38 \div 5 \quad 153 \div 5 \quad 603 \div 6 \quad 87 \div 7 \]

- What do you notice about the answers?
- Write four more divisions that have a similar result.

Can you find a question that gives this result when dividing by 2 or by 3? Why not?

Challenge

Now find some division questions that give a remainder of 5. What numbers will you have to avoid dividing by this time?

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