Calculating time – time trails

We can use our knowledge of basic time facts to help us convert between hours, seconds and minutes.

<table>
<thead>
<tr>
<th>By knowing these facts:</th>
<th>We can convert times such as:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 minute = 60 seconds</td>
<td>3 minutes = 180 seconds (3 \times 60)</td>
</tr>
<tr>
<td>1 hour = 60 minutes</td>
<td>1 \frac{1}{2} \text{ hours} = 90 minutes (60 + 30)</td>
</tr>
<tr>
<td>1 day = 24 hours</td>
<td>1 week = 168 hours (7 \times 24)</td>
</tr>
<tr>
<td>1 year = 52 weeks</td>
<td>2 years = 104 weeks</td>
</tr>
</tbody>
</table>

1. How many seconds or minutes? You may use a calculator if you wish:
   - a) 7 minutes = _______ seconds
   - b) 86 minutes = _______ seconds
   - c) 360 seconds = _______ minutes
   - d) 420 seconds = _______ minutes
   - e) 240 seconds = _______ minutes
   - f) 48 minutes = _______ seconds

2. Convert the following into more appropriate units:
   - a) 240 minutes = _______ hours
   - b) 360 minutes = _______ hours
   - c) 360 seconds = _______ minutes
   - d) 420 minutes = _______ hours
   - e) 420 seconds = _______ minutes
   - f) 540 seconds = _______ minutes

3. Use a calculator to help you work out how many:
   - a) minutes in a day ________________
   - b) minutes in a week ________________
   - c) minutes in a year ________________
   - d) minutes you have been alive ________________

   I need to multiply to move from a larger unit to a smaller unit and divide to do the opposite

4. Did you know that the giant tortoise has a life span of 177 years?
   How many days is this? ________________

Time
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5 Draw hands on these clocks to show the time half an hour later:

- a 10:45
- b 8:15
- c 2:20
- d 9:55

6 Draw hands on these clocks to show the time half an hour earlier:

- a 1:15
- b 5:40
- c 11:05
- d 7:35

7 Complete these clocks to show the elapsed times:

<table>
<thead>
<tr>
<th></th>
<th>35 minutes</th>
<th>42 minutes</th>
<th>59 minutes</th>
<th>17 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>3:35</td>
<td>1:14</td>
<td>9:07</td>
<td>6:32</td>
</tr>
<tr>
<td>Finish</td>
<td><img src="clock10.png" alt="Image" /></td>
<td><img src="clock12.png" alt="Image" /></td>
<td><img src="clock13.png" alt="Image" /></td>
<td><img src="clock9.png" alt="Image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>100 minutes</th>
<th>19 minutes</th>
<th>48 minutes</th>
<th>12 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td><img src="clock14.png" alt="Image" /></td>
<td><img src="clock15.png" alt="Image" /></td>
<td><img src="clock16.png" alt="Image" /></td>
<td><img src="clock17.png" alt="Image" /></td>
</tr>
<tr>
<td>Finish</td>
<td>8:00</td>
<td>2:05</td>
<td>5:41</td>
<td>10:49</td>
</tr>
</tbody>
</table>
Calculating time – word problems

Timelines can help us with more difficult word problems.

**Question:** Tina went to watch a movie that started at 5:38 pm and finished at 7:10 pm. How long did the movie go for?

**Steps:**
1. First count on in hours in your head to get as close to the finish time as possible and write it in the first box. (The finish time is 7:10 pm so we need to add 1 hour to 5:38 pm make it 6:38 pm.)
2. Then count on in 10 minute and 2 minute jumps until you get to the finish time.

5:38 pm + 1 hour = **6:38 pm**

7:10 pm

**Answer:** 1 hour and 32 minutes

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1. **Show how you use the timeline by adding the jumps to each timeline.**
   a. Year 12 were doing a writing assessment that started at 11:20 am and finished as 1:12 pm. How much time were they allowed?

   11:20 am + 1 hour = **12:20 pm**

   b. Tammy entered a shopping centre car park at 11:32 am and left at 3:26 pm. How long was Tammy shopping for?

   11:32 am + 3 hours = **2:32 pm**

   c. Last Easter holidays, the Gilmore family got stuck in a traffic jam and were delayed. If they arrived at 5:52 pm and were due to arrive at 3:10 pm, how long were they delayed?

   3:10 pm + ____ = 

   d. On Saturday I went to a film that started at 5:15 pm and finished at 7:52 pm. How long was this film?

   5:15 pm + ____ = 

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Calculating time – word problems

2 Use these timelines to help work out the answers by working backwards:
   a Amity's alarm clock went off at 7:42 am. This was 2 hours and 48 minutes too late so she missed her bus. What time should it have gone off?

   -40 mins
   -8 mins

   7:42 am

   HINT: Count back in minutes and then hours.

   b A plane arrived in Sydney at 9:48 am. It had left Adelaide 2 hours and 36 minutes earlier. What time did it leave Adelaide?

   -30 mins
   -6 mins

   9:48 am

3 Figure out the scale used for these timelines and answer the questions:
   a Work out the time each person arrived at the soccer match using the scale below and this clue: Charlie arrived 14 minutes later than Marty.

   Marty arrived
   Charlie arrived
   Lanya arrived

   1:15 pm

   Marty
   Charlie
   Lanya

   b Work out what time the first person arrived at Dan's party using the scale below and this clue: Lunch was served at 12:50 pm.

   First person arrives
   Lunch is served
   Party games start

   3:00 pm

   The first person arrived at