

Time 2 (Intermediate UKMT)

These questions must be attempted ***without a calculator***

Topics covered in the questions below may not necessarily be from the topic of the title.

1. A certain company offers “750 hours of free Internet use for new subscribers”. On closer inspection it becomes clear that this time must be used during the new subscriber's first month of membership!

What is the maximum number of hours in any one month of the year?

- A 168 B 692 C 720 D 744 E 750

2. Sydney flew to Melbourne, Australia. The flying time to Melbourne, which is 11 hours ahead of Britain, was 21 hours. Sydney's flight left London at 11.30am on Tuesday.

What time was it in Melbourne when Sydney's flight arrived?

- A 9:30pm on Tuesday B 8:30am on Wednesday C 7:30pm on Wednesday
D 6:30am on Thursday E 7:30pm on Thursday

3. In a certain year, there were exactly four Tuesdays and exactly four Fridays in October.

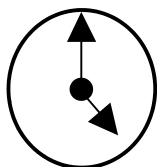
On what day of the week did Halloween, October 31st, fall that year?

- A Monday B Wednesday C Thursday D Saturday E Sunday

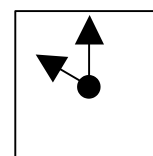
4. Grannie's watch gains 30 minutes every hour, whilst Grandpa's watch loses 30 minutes every hour. At midnight, they both set their watches to the correct time of 12 o'clock.

What is the correct time when their two watches next agree?

Grannie's watch:



Grandpa's watch:



- A 6 am B 9 am C 12 noon D 3 pm E 6 pm

5. Leap years normally occur every four years. However, years at the turn of a century are leap years only if they are multiples of 400. Therefore the year 2000 was a leap year, but the year 1900 was not a leap year.

How many leap years will there be between 2001 and 3001?

- A 240 B 242 C 248 D 249 E 250

6. When dates are written using eight digits, e.g. 06 02 2003 for today, the 20th of February 2002 is a palindromic date since 20 02 2002 has the same digits in the same order when read in reverse. The previous palindromic date and the next few all occur in the month of February.

What will be the next month other than February to have a palindromic date in it?

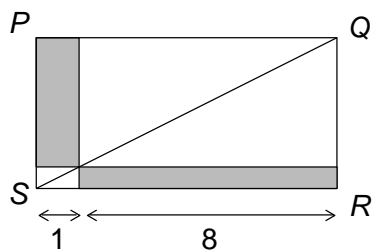
- A March B April C October D November E December

7. An athlete covers three consecutive miles by walking the first mile, running the second and cycling the third. He runs twice as fast as he walks, and he cycles one and a half times as fast as he runs. He takes ten minutes longer than he would do if he cycled the three miles.

How long does he take by walking, running and cycling?

- A 60 min B 42 min C 36 min D 30 min E 22 min

8. What fraction of the rectangle $PQRS$ is shaded?



- A $\frac{16}{81}$ B $\frac{4}{9}$ C $\frac{2}{9}$ D $\frac{1}{8}$ E $\frac{1}{9}$

9. In 2002 the year started on a Tuesday.

In which of the following years does each date fall on the same day of the week as it fell in 2002?

- A 2008 B 2009 C 2012 D 2013 E 2014