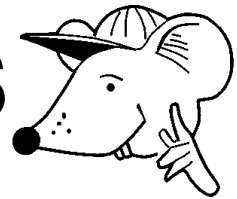# MATHEMATICS

N.S. Yr. 5   P.99

**Vocabulary of time.
Estimating and measuring time.**

Equipment

Pencil, paper, clocks and stopwatches.

MathSphere

Concepts

Children should understand and be able to use the following vocabulary:

Sunday to Saturday, January to December, Spring to Winter.
Day, week, fortnight, month, season, year, leap year, century, millennium, morning, afternoon, evening, night, midnight, noon, hour, minute, second, today, yesterday, tomorrow, weekend, a.m., p.m.,
how long ago, how long will it be to, arrive, depart, faster, fastest, slower, slowest, takes less time, earliest, latest.
Digital clock, analogue clock, 24 hour clock, 12 hour clock

Children should know the main units of time and how they relate to other units:

1 millennium	= 1 000 years
1 century	= 100 years
1 year	= 12 months or 52 weeks or 365 days
1 leap year	= 366 days
1 week	= 7 days
1 day	= 24 hours
1 hour	= 60 minutes
1 minute	= 60 seconds

They should know and be able to apply the rhyme:

30 days hath September
April, June and November.
All the rest have 31,
Except February alone,
Which has but 28 days clear
And 29 in each leap year.

Children should be able to suggest suitable units to measure everyday events such as seconds to measure the time for ten breaths.

They should be able to choose a suitable timing device for a great range of time measures from seconds to months.

They should then be able to take simple measurements of a great range of times.

Lastly, they should be able to give reasonable estimates of times.

1. How many days are there in a normal year? How many are there in a leap year? Why do we have leap years?

2. Answer the following questions:

a. 1992 was a leap year.
How many days were there in each of 1992, 1993, 1996, 1998 and 2000 ?

b. How many days were there in February in 1992 ?

c. How many days were there in the first three months of 1992?

d. How many days were there in the last three months of 1992 ?

e. How many days were there in all the years between 1992 and 2000 (inclusive)?

f. How many centuries are there in one millennium?

g. How many centuries are there in five millennia?

h. A generation of humans is approximately 25 years.
How many generations are there in a millennium?

3. Here are some clocks:
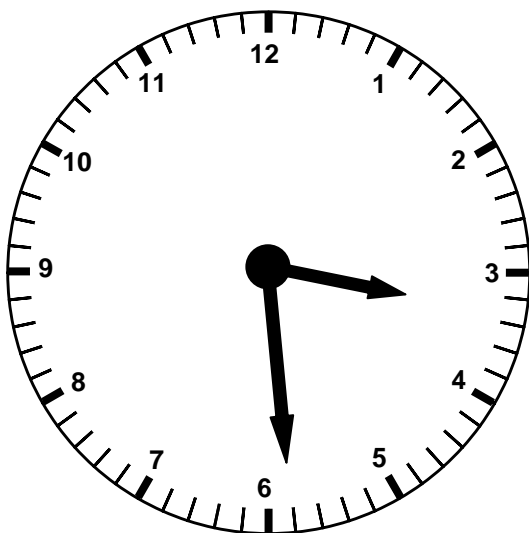
2:10 pm

Clock B

01:28

Clock C

Clock A

a. Which of the clocks are analogue clocks?

b. Which of the clocks are digital clocks?

c. Which of the clocks are showing 24 hour times?

d. Which of the clocks are showing 12 hour times?

1. Which of these are 12 hour times?

   06.35, 3.00 a.m., 18.45, 5.37 p.m.

2. Which of these are 24 hour times?

   16.55, 8.20 p.m., 8.45 a.m., 23.23

Okay, you can use a calculator for the difficult ones!

3. How many hours are there in a week?

4. How many seconds are there in one hour?

5. How many seconds are there in one day?
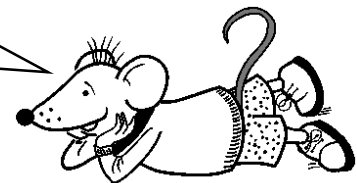
6. How many seconds are there in July?

7. How many seconds are there in a normal year?

8. If there are 86 400 seconds in the day and I'm in love, what day is it?

That's me, folks!

9. A ship sets sail at 02.56 and arrives at its destination at 12.26. How long does the journey last?

10. Peter started his homework at 3.40 p.m. and finished at 5.15 p.m. How long did he take?

11. Which is the earliest time in the day?

   9.20 a.m.,   08.45, 3.45 p.m.,   23.17, 8.26 a.m.

12. Which is the latest time in the day?

   23.16, 8.34 p.m., 10.02 p.m.,   22.00

13. What is the date of the last day in the year?

In these questions you are given **four** possible times for an event.
Choose the one you think is the best answer.

I'd rather have 4 cakes!

1. How long does it take to boil an egg?

   a. 30 seconds   **b.** 3 minutes   **c.** 30 minutes   **d.** 3 hours

2. How long does it take to get to the Moon?

   a. 30 minutes   **b.** 3 hours   **c.** 3 days   **d.** 3 months

3. How long does it take to fly from London to Athens?

   a. 40 minutes   **b.** 4 hours   **c.** a day   **d.** 2 weeks

4. How long does it take to run a marathon?

   a. 10 minutes   **b.** 20 minutes   **c.** 3 hours   **d.** 20 hours

5. How long is it from sunrise to sunset on Mid Summer's Day?

   a. 5 hours   **b.** 10 hours   **c.** 17 hours   **d.** 25 hours

6. How long does it take to run 100m ?

   a. 1 second   **b.** 18 seconds   **c.** 5 minutes   **d.** 12 minutes

7. How long does one episode of a television soap last?

   a. 6 minutes   **b.** 28 minutes   **c.** 170 minutes   **d.** 5 hours

8. How long does it take a camera to take a holiday snap?

   a. $^1/_{60}$ second   **b.** 5 seconds   **c.** 3 minutes   **d.** 10 minutes

9. How long does it take the Earth to go round the Sun?

   a. 1 hour   **b.** 1 day   **c.** 1 month   **d.** 1 year

Measuring

1. Which **unit of time** would you choose to measure or record these times?

     a. The time it takes to cross a road.
     b. The time from when Jesus lived to now.
     c. The time it takes to mow the grass.
     d. The time it takes a CD to play.
     e. The time a hedgehog hibernates.
     f. The time it takes to walk 20 metres.

2. Write down an estimate for each of these: Say which units you are using.

The time it takes to eat a bowl of spaghetti.
The time it takes to deal a pack of cards to four people.
The time it takes put the numbers 1 to 9 in a 3×3 magic square.
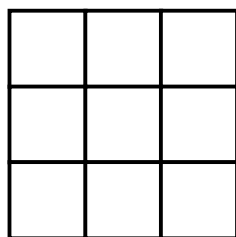
When you have estimated these, you can try them!!!!!

The time it takes to eat 50g of baked beans with a tooth pick.
The time it takes to drink 500 ml of water.
The time it takes to eat a raw carrot.

That should be fun! Who's clearing up the mess?

3. Estimate how long it will take four of your friends to do a 10×10 multiplication square. Put your estimates in the table.
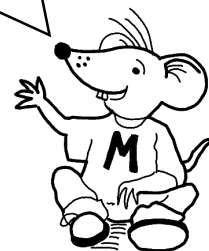Then try them to see how long they really take and put those times in the table too.

Name	Estimated time	Actual time

Measuring

1. This activity will take a long time.
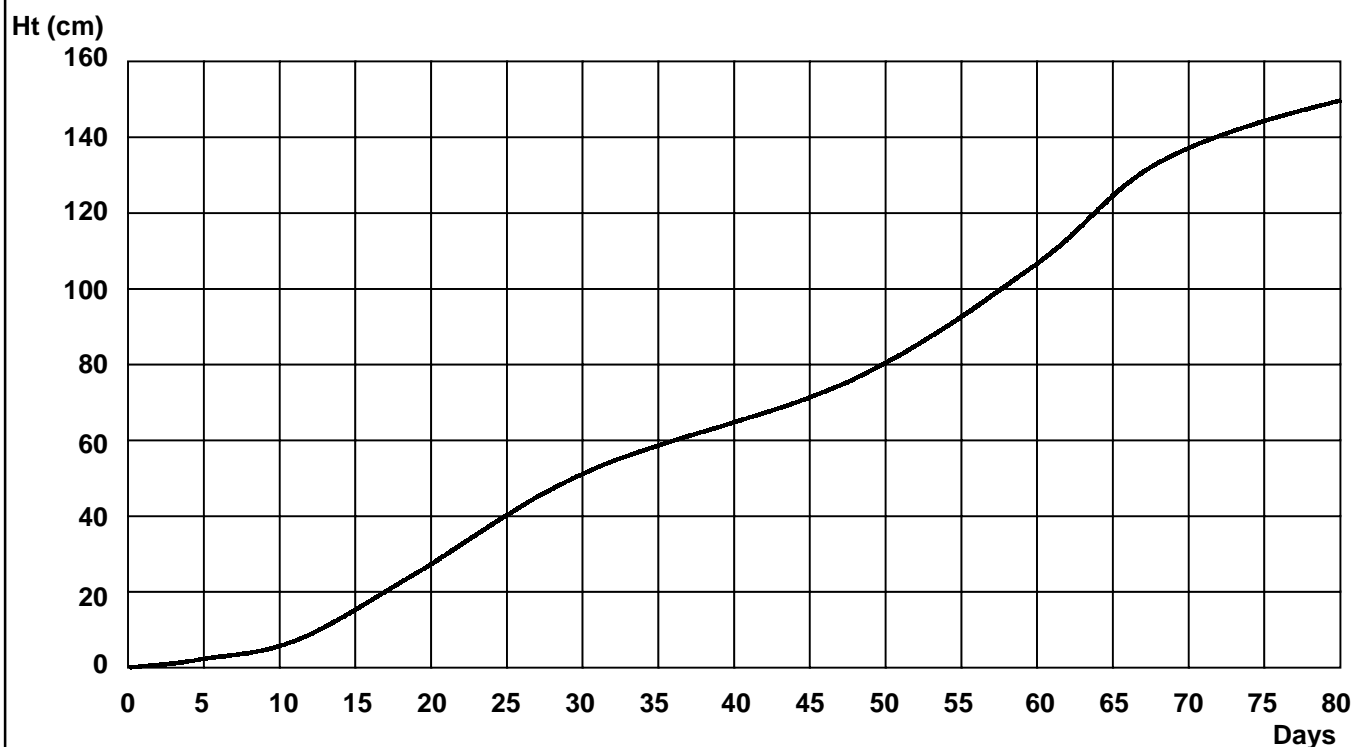
That's okay, I'm still young!

Find out how to plant seeds.

There are many seeds you can choose from - runner beans, sweet peas, tomatoes, daffodils and so on.

Look on the packet to see how tall they will grow.

Draw a graph to show how you think they will grow over the next few weeks. You may need some help with this from a teacher or other adult.

Here is an example:

Ht (cm)

| 160 |
| 140 |
| 120 |
| 100 |
| 80 |
| 60 |
| 40 |
| 20 |
| 0 |

0   5   10   15   20   25   30   35   40   45   50   55   60   65   70   75   80

Days

Now watch your seeds grow and measure them regularly. Draw the graph of how they actually grow on the same axes and compare the two graphs.

<u>Answers</u>

Page 3
1. There are 365 days in a normal year. There are 366 in a leap year.

The Earth takes just over $365\frac{1}{4}$ days to travel around the sun (365.25636 days, if you want a more accurate period). This means every four years we need another day to keep the calendar in order. If we did not, Christmas Day for example, would gradually move towards the summer in the northern hemisphere and winter in the southern hemisphere!

2. a. 1992: 366,   1993: 365,   1996: 366,   1998: 365,   2000: 366

   b. 29 **c.** 91 **d.** 92 **e.** 3 288 **f.** 10 **g.** 50 **h.** 40

3. a. A   **b.** B and C   **c.** C   **d.** A and B

Page 4
1. 3.00 p.m.,   5.37 p.m.
2. 16.55, 23.23
3. 168
4. 3 600
5. 86 400
6. 2 678 400
7. 31 536 000
8. 14th February Valentine's Day, naturally
9. 9 hrs 30 mins
10. 1 hr 35 mins
11. 8.26 a.m.
12. 23.16
13. December 31st

Page 5
1. b. 3 minutes
2. c. 3 days
3. b. 4 hours
4. c. 3 hours
5. c. 17 hours
6. b. 18 seconds
7. b. 28 minutes
8. a. $\frac{1}{60}$ second
9. d. 1 year

Answers (Contd)

Page 6

1.
a. seconds
b. millennia, centuries or years (this shows that we sometimes use a variety of units depending on circumstances)
c. minutes
d. minutes
e. months or weeks
f. seconds

2. Depends on circumstances. Make sure units are correct. Have fun!
3. Depends on circumstances.

Page 7
1. This is a simple set of observations to make. If you wish to make it more complicated, you could do several at once - perhaps some being watered, others receiving less water; some growing indoors, other outdoors, etc.

Use the opportunity to ask questions such as 'Do plants grow quicker when they are younger or when they are older?', 'How does this compare to humans?', 'Does the type of soil make a difference?', 'Was our estimate a good one - how does the line of real growth compare with the estimated line?'