Mathematics Assessment Program   *MS - 3*

Middle School Mathematics

Time Allowed
Section A - 40 minutes; Section B - 40 minutes

These tasks give you a chance to show what you know and how you reason, and to solve mathematical problems.

Please show your work and reasoning in the spaces provided. Explain any assumptions you make.

**Try as many tasks as you can in the time given.
If you get stuck on a task, move on to the next task.**

Name: _____   Male Female

School: _____ City: _____

Teacher: _____ Grade: _____

Date: _____

Do not write in the box below:

MS-3	Short Tasks	Bike Ride	Linear Graphs	Scatter Diagram	A Million Dollars	Sports Bag	Tuck Shop	Total

Section A - 40 minutes

Short Tasks

1. The spin on a washing machine takes out 35% of the water in the clothes. The clothes in the washing machine contain 3 pints of water. How much water is left after a spin?

_____

2. Draw a circle around the fraction which is nearer to 1.

$$\frac{5}{6} \qquad \textbf{or} \qquad \frac{6}{5}$$

_____

3. One of the numbers below has the same value as 3.5×10^{-3}. Write true under the correct number.

35×10^{-4} 3.5×10^{3} 0.00035   3500
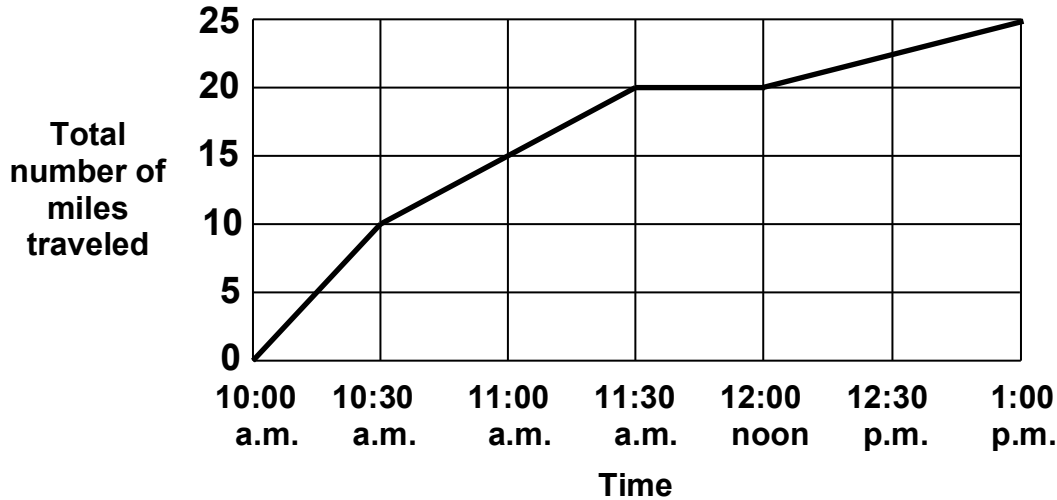
_____   _____   _____   _____

4. After being dropped a certain ball always bounces back to 2/5 of the height of its previous bounce. After the first bounce it reaches a height of 125 inches. How high (in inches) will it reach after its fourth bounce

_____

5. A picture is copied onto a sheet of paper 8.5 inches by 10 inches. A 1.5 inch margin is left all around. What area in square inches does the picture cover?

_____

Bike Ride

Selina and Jack went for a bike ride today.

They made this graph of their bike ride.

Total number of miles traveled (y-axis: 0, 5, 10, 15, 20, 25)

Time (x-axis: 10:00 a.m., 10:30 a.m., 11:00 a.m., 11:30 a.m., 12:00 noon, 12:30 p.m., 1:00 p.m.)

Time

1. How many miles did they travel in all? _____ miles

2. How long did their bike ride take? _____ hours

3. When were they cycling the fastest? _____
   Explain your answer.

   _____

   _____

4. What does the graph show that they did between 11:30 a.m. and 12 noon?

   _____

   Explain your answer.

   _____

   _____

5. What was their speed between 12 noon and 1 p.m.?
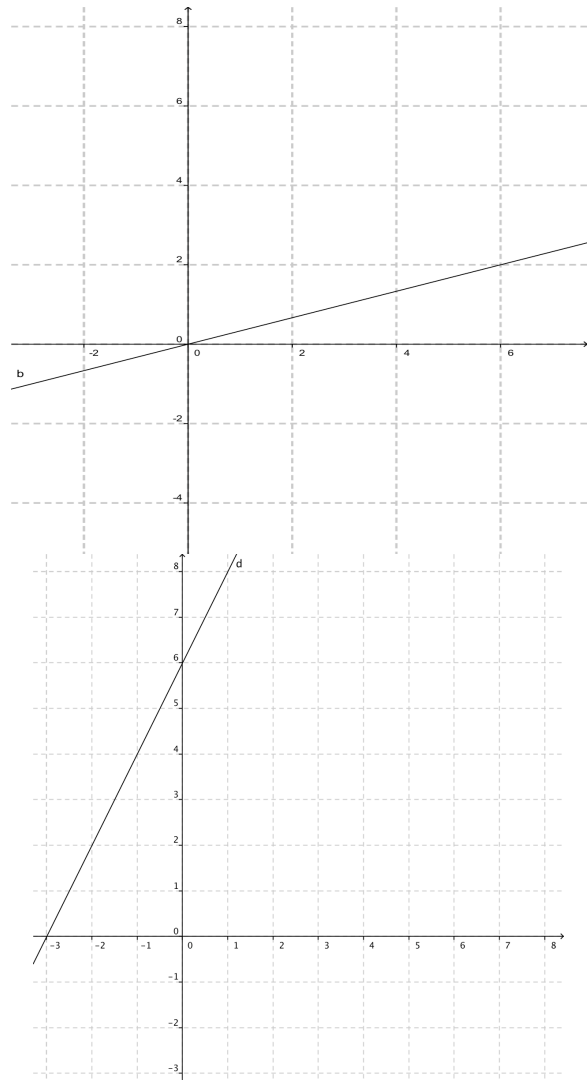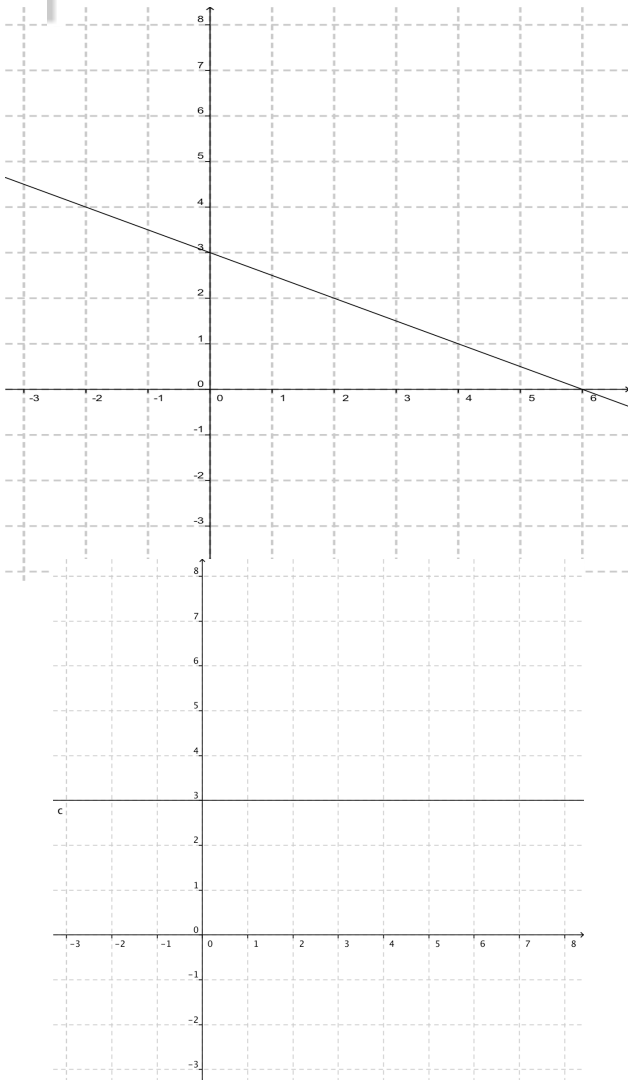
   _____ miles an hour

Test MS--3

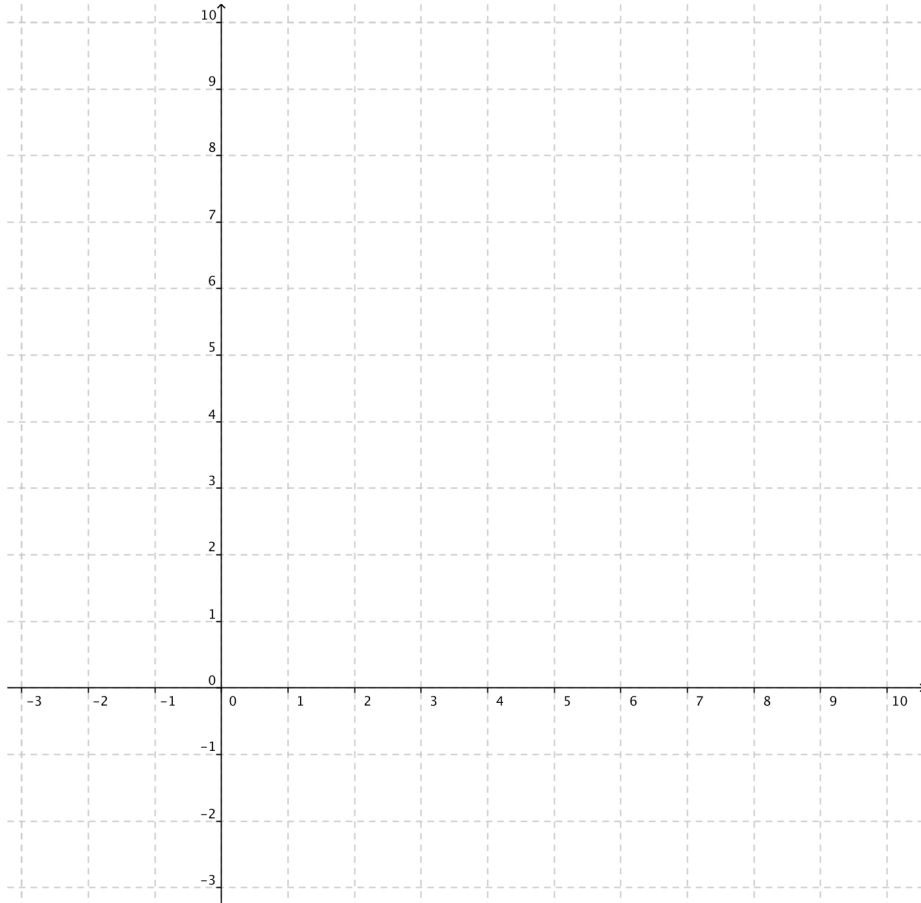# Linear Graphs

Here are the equations of some linear graphs.

$$y = 3$$
$$y = 2x + 6$$
$$2y + x = 0$$
$$y = \frac{1}{3}x$$
$$2y - x = 6$$

1. Four of the graphs are drawn below.

a. Write the correct equation on each graph.

b. Draw the graph of the left-over equation on the diagram opposite.

Test MS--3

2. a.. Which equation could represent the speed of someone walking steadily?

_____

b. Which equation could represent the conversion between two different currencies?

_____

Scatter Diagram

A group of 66 students took two tests; Test A and Test B.

In the scatter diagram, each square represents one student, and shows the scores that student got in the two tests.

Scores in Test A and Test B
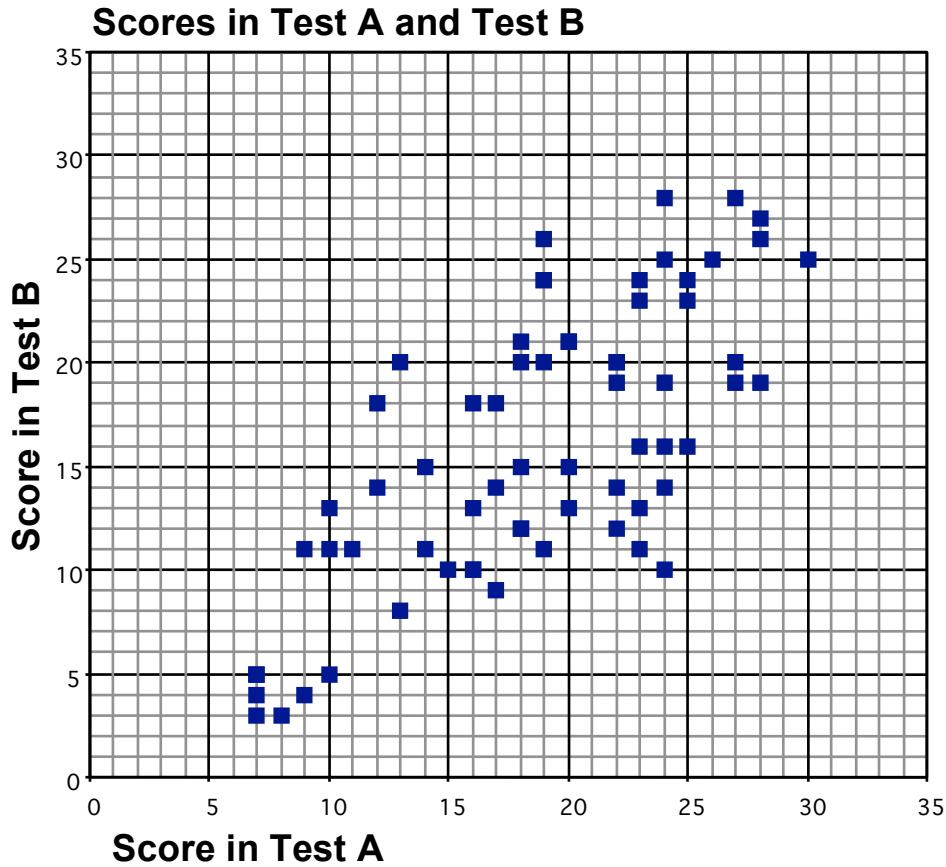
1. The mean score for Test A was 19 and the mean score for Test B was 16.

   Plot a point to show this on the scatter diagram.

2. Draw a line of best fit on the scatter diagram.

   How can a line of best fit be used?

   _____

   _____

3. Here are five statements about the scores shown on the scatter diagram.

   If a statement is true check ($\sqrt{}$) it.

   If it is not true, write a correct statement.

Statement	Check ($\sqrt{}$) or write a correct statement
The scatter diagram shows positive correlation between the scores on Test A and the scores on Test B.	
The lowest score on Test A is lower than the lowest score for Test B.	
The range of scores on Test B is 25.	
The student with the highest score on Test A also has the highest score on Test B.	
The biggest difference between a student's scores on the two tests is 5.	

A Million Dollars

In all these tasks you should show your calculations and give your answers to the nearest whole number.

1. How many $3.50 burgers can you buy for a million, 10^6, dollars?

   _____

2. How many years does it take to earn 10^6 dollars if you are paid $30 an hour and work 35 hours a week for 50 weeks a year?

   _____

3. A dollar bill weighs one gram. How many pounds do 10^6 dollar bills weigh? (10^3 grams is 1 kilogram and 1 kilogram is 2.205 pounds.)

   _____

4. A dollar bill is 0.0043 inches thick. How many yards high is a pile of 10^6 dollar bills?

   _____

Test MS--3

Section B - 40 minutes

Sports Bag
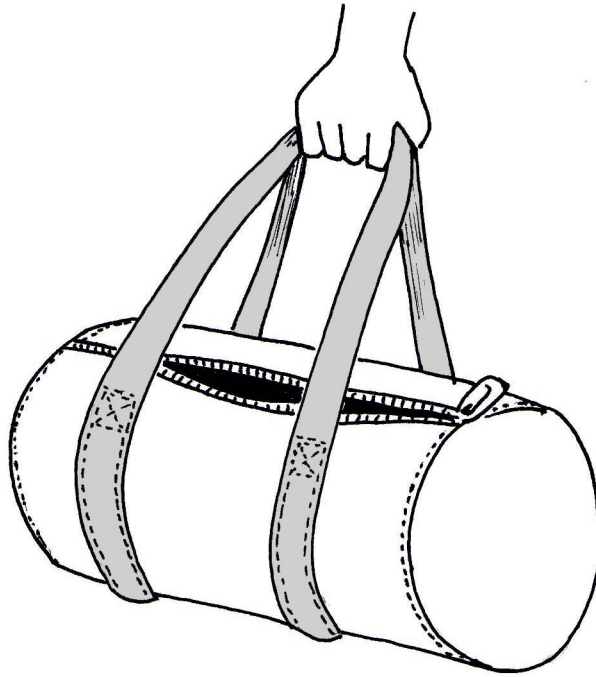
You have been asked to design a sports bag.

- The length of the bag will be 60 cm.
- The bag will have circular ends of diameter 25 cm.
- The main body of the bag will be made from 3 pieces of material; a piece for the curved body, and the two circular end pieces.
- Each piece will need to have an extra 2 cm all around it for a seam, so that the pieces may be stitched together.

1. Make a sketch of the pieces you will need to cut out for the body of the bag. Your sketch does not have to be to scale.
   On your sketch, show all the measurements you will need.

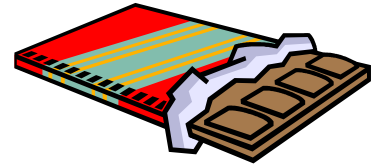2. You are going to make one of these bags from a roll of cloth 1 meter wide.

   What is the shortest length that you need to cut from the roll for the bag?

   Describe, using words and sketches, how you arrive at your answer.

Sports Bag continued

Candy Bars

A group of friends are planning to sell candy bars at the school shop.
They conduct a small survey among 30 people, asking the question:
How many candy bars do you eat in a typical week ?
Here are their results:

Male 1 bar	Female 4 bars	Male 5 bars	Female 1 bar	Male 2 bars	Male 25 bars
Male 13 bars	Female 0 bars	Male 2 bars	Male 9 bars	Male 6 bars	Female 16 bars
Female 14 bars	Male 10 bars	Male 19 bars	Male 11 bars	Female 1 bar	Male 0 bars
Male 1 bar	Male 3 bars	Female 10 bars	Male 25 bars	Female 16 bars	Male 13 bars
Female 30 bars	Male 8 bars	Male 2 bars	Male 0 bars	Male 28 bars	Female 0 bars

1. Draw graphs or charts to compare the results for males and females.

Test MS--3

Candy Bars continued

2. Chris says:

" We have found that the total number of candy bars eaten by all the males is 183, and the total number eaten by all the females is 92. In general, this means that men eat more candy bars than women."

(a) Give two reasons why Chris is wrong in his reasoning.

_____

_____

_____

_____

_____

_____

(b) Write **one** conclusion (comparing males and females) that is supported by the data. Show any work you do.

_____

_____

_____

_____

_____

Test MS--3