

## Graphs Revision

1) Using the tables of values provided, plot the following graphs:

a)  $y = 3x - 1$

$x$	-3	-2	-1	0	1	2	3
$y$							

b)  $y = 7 - 2x$

$x$	-3	-2	-1	0	1	2	3
$y$							

c)  $y = x^2 + 2x - 4$

$x$	-3	-2	-1	0	1	2	3
$y$							

2) Write down the gradient and y-intercept of the following straight lines:

a)  $y = 3x + 4$

b)  $y = 7 - x$

c)  $y = 7x$

d)  $y = \frac{x}{2} - 1$

e)  $x - y = 5$

f)  $3y - 2x = 5$

3) Find the equation of the straight line:

a) with gradient of 4 that passes through (2,3)

b) with gradient of -2 that passes through (-1,-5)

c) parallel to  $y = 3x + 5$  that passes through (4,-1)

d) that passes through (3,4) and (5,-2)

e) perpendicular to  $y = 2x - 1$  that goes through (4,3)

f) perpendicular to  $y = \frac{1}{3}x + 7$  that goes through (-1,5)

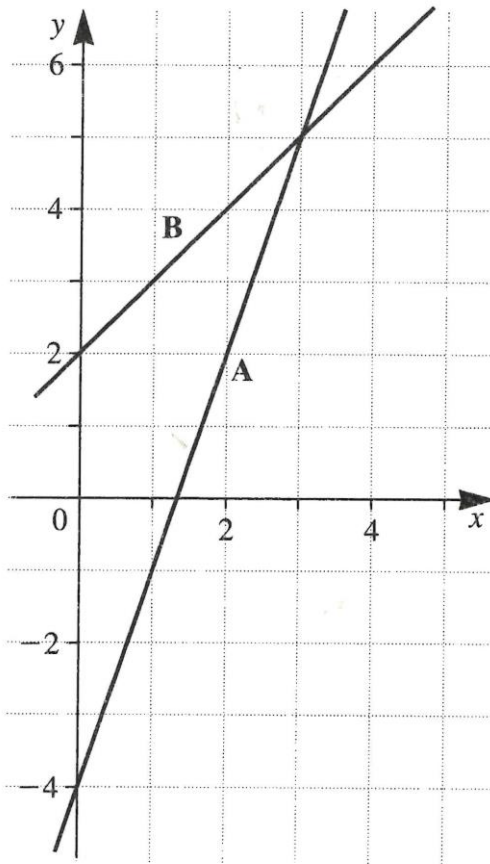
g) perpendicular to  $2y = -3x$  that goes through (6,-1)

4) Write down the equations of the following lines:

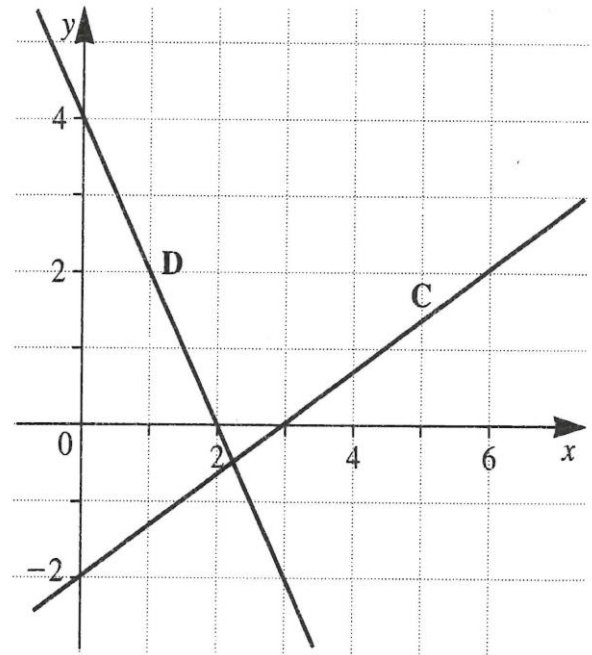
a) horizontal line going through -3

b) vertical line going through 6

5) Find the equations of the lines A and B.

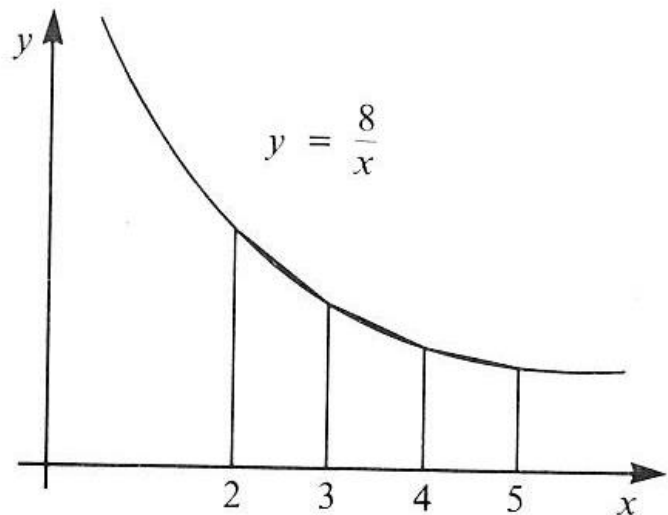


Find the equations of the lines C and D.



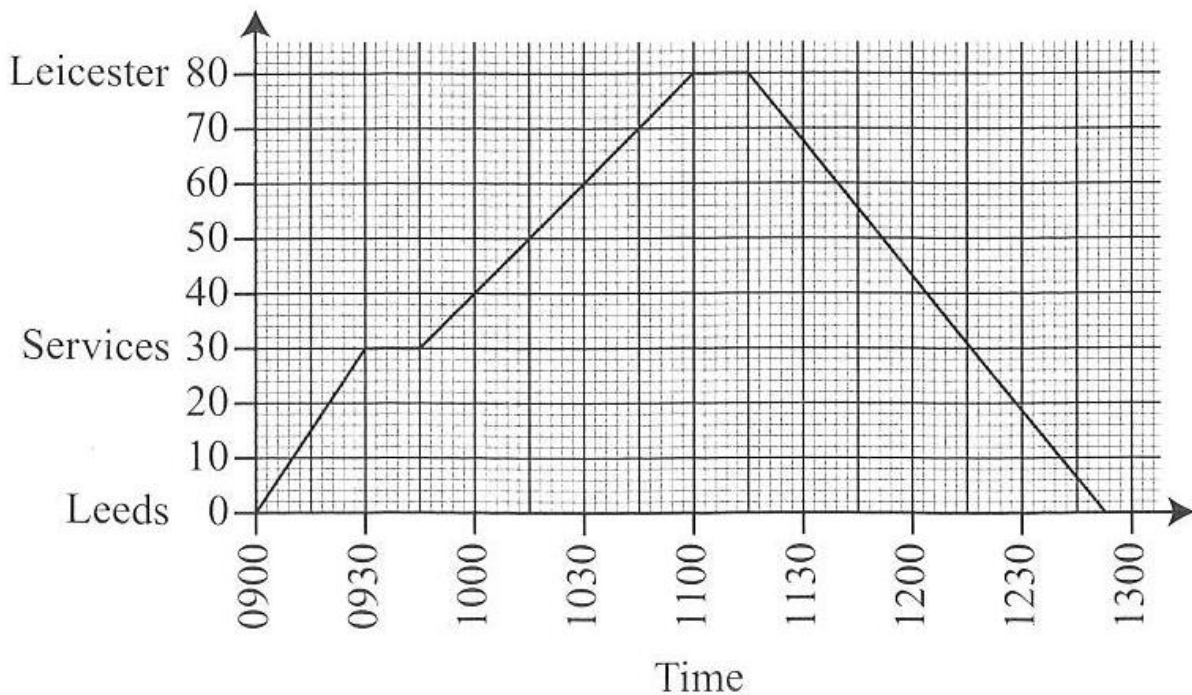
6) Estimate the area enclosed by  $y = \frac{8}{x}$ ,  $x = 2$ ,  $x = 5$  and the  $x$  axis. Use 3 strips.

Do you think your answer will be an under or over estimate?



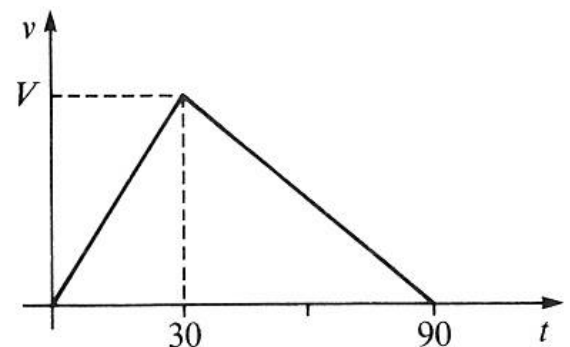
7) The graph below shows a car journey from Leeds to Leicester and back

Distance  
from Leeds (miles)



- how far is the car from Leeds at 1015?
- find the speed of the car between the services and Leicester
- how long did the car stop for?
- find the average speed of the car

- 8) Find
- $V$  if the total distance travelled is 900 m,
  - the distance travelled in the first 60 seconds.



9) The velocity,  $v$ , of a car (m/s) is given by the formula:

$$v = 40 + t - t^2$$

- Draw a velocity time graph for the first 6 seconds of travel.
- Find its acceleration at 3 seconds
- Find its average acceleration between 0 and 3 seconds

- d) Find the total distance travelled by the car during the 6 seconds.  
 e) Find out when the acceleration is approximately  $1\text{m/s}^2$
- 10) An athlete is running at  $5\text{m/s}$  and accelerates uniformly during the last  $100\text{m}$  of the race at  $0.5\text{m/s}^2$ . How long does it take her to complete this section of the race?
- 11) A horse starts a  $50\text{m}$  run at rest and accelerates uniformly up to  $7\text{m/s}$  by the end of the section. Find its acceleration.
- 12) A lorry is travelling at  $12\text{m/s}$  and applies the brakes, covering  $20\text{m}$  in the next 2 seconds, find the deceleration of the lorry.
- 13) A cheetah is walking at  $1\text{m/s}$  and then suddenly accelerates at  $4\text{m/s}^2$  for 5 seconds. Find the distance covered during this period and its speed after 5 seconds.

**Answers:**

- 1) y-values are... a) -10, -7, -4, -1, 2, 5, 8 b) 13, 11, 9, 7, 5, 3, 1  
 c) -1, -4, -5, -4, -1, 4, 11 2) gradient/y-intercept a)  $3/4$  b)  $-1/7$  c)  $7/0$   
 d)  $0.5/-1$  e)  $1/-5$  f)  $\frac{2}{3}/\frac{5}{3}$  3a)  $y = 4x - 5$  b)  $y = -2x - 7$  c)  $y = 3x - 13$   
 d)  $y = -3x + 13$  e)  $y = -\frac{1}{2}x + 5$  f)  $y = -3x + 2$  g)  $y = \frac{2}{3}x - 5$   
 4a)  $y = -3$  b)  $x = 6$  5a)  $y = 3x - 4$  b)  $y = x + 2$   
 c)  $y = \frac{2}{3}x - 2$  d)  $y = -2x + 4$  6)  $\frac{112}{15}$  overestimate 7a) 50miles b) 40mph  
 c) 30min d) 41.3mph 8a) 20 b) 750m  
 9)

V	0	1	2	3	4	5	6
t	40	40	38	34	28	20	10

- b)  $\sim -5\text{m/s}^2$  c)  $-2\text{m/s}^2$  d)  $161\text{m}$  e)  $0.5\text{s}$   
 10)  $12.4\text{s}$  11)  $0.49\text{m/s}^2$  12)  $2\text{m/s}^2$  13)  $55\text{m}$  and  $21\text{m/s}$