

7. Add up the total score from each of the rounds to get an estimate of John's score.

### Achievement Standard 1.2

#### Graphing

This year we deal with linear graphs (straight lines) and parabolas only.

#### Linear Graphs

The equation of a straight line is usually written in the form

$$y = mx + c$$

↗  
Gradient  
or slope

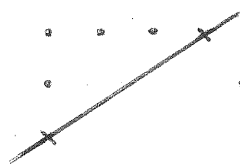
↑  
y intercept

#### Slope (or gradient)

The slope  $m = \frac{\text{rise}}{\text{run}}$

eg Draw lines with the following slopes

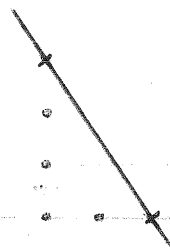
1)  $m = \frac{2}{3}$



2)  $m = -2 = \frac{-2}{1}$

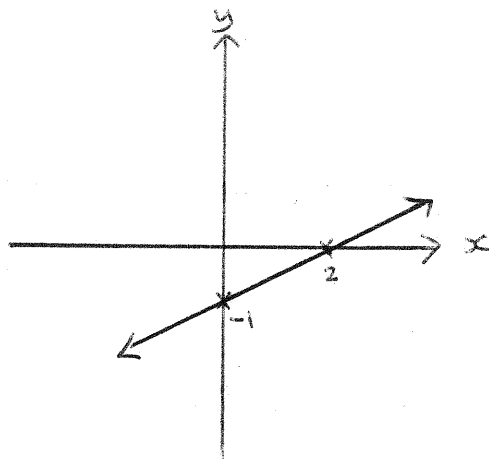


3)  $m = -\frac{3}{2} = \frac{-3}{2}$

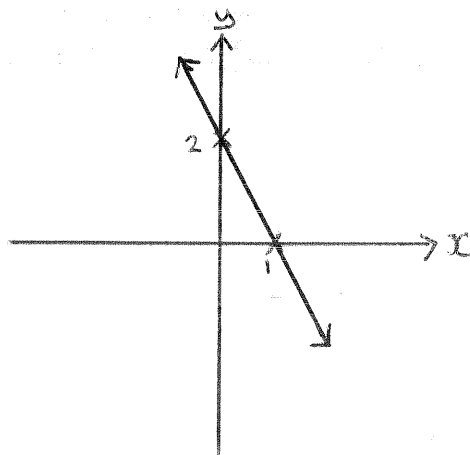


## Gradient - Intercept Method

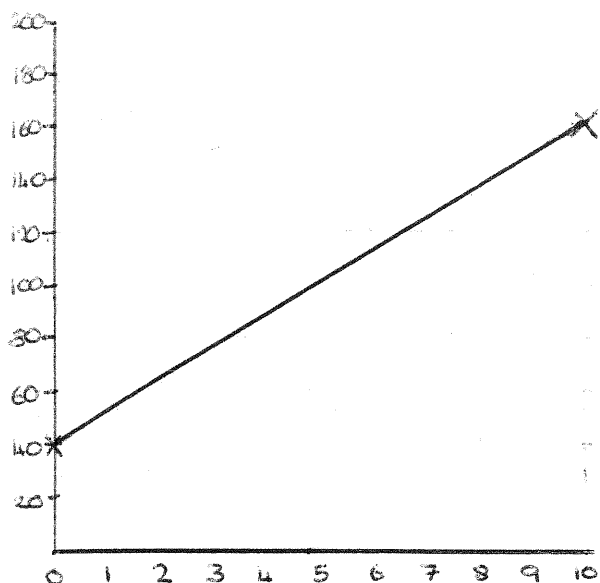
1) Graph  $y = \frac{1}{2}x - 1$



2) Graph  $y = -2x + 2$       slope  $= -2 = \frac{-2}{1}$



3) Graph  $C = 12h + 40$



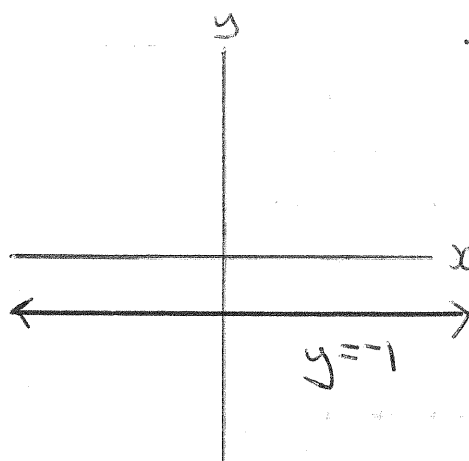
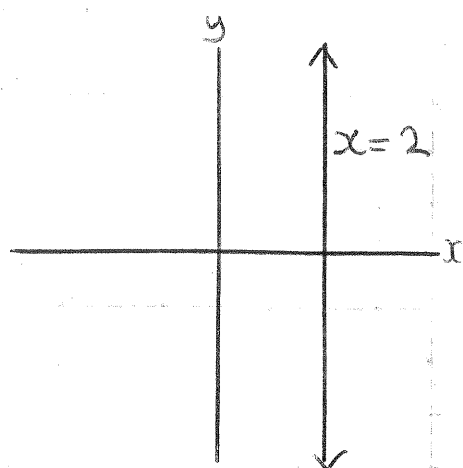
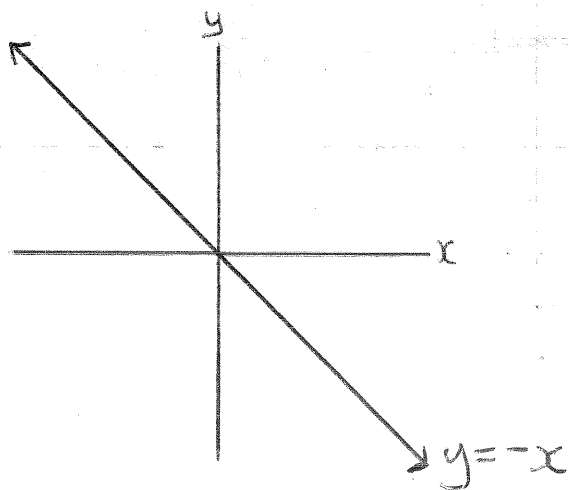
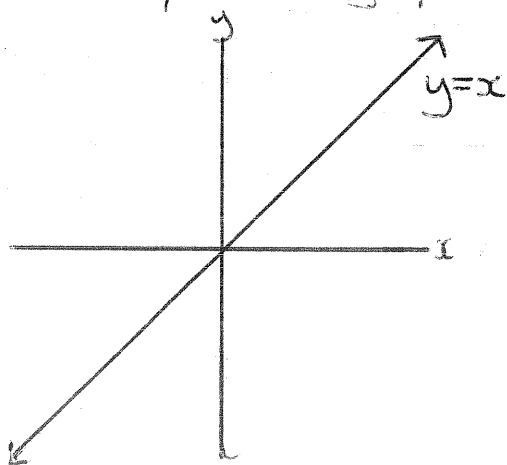
Graph cuts vertical axes at 40

When,  $h = 10$

$$C = 12(10) + 40$$

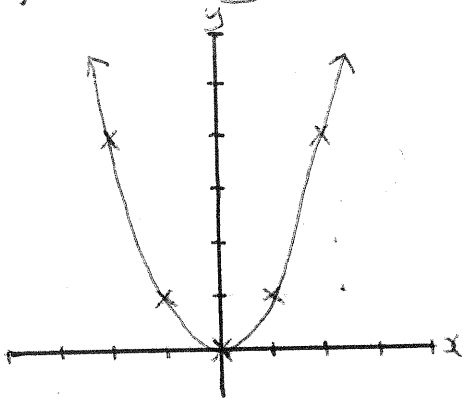
$$C = 160$$

4 important graphs

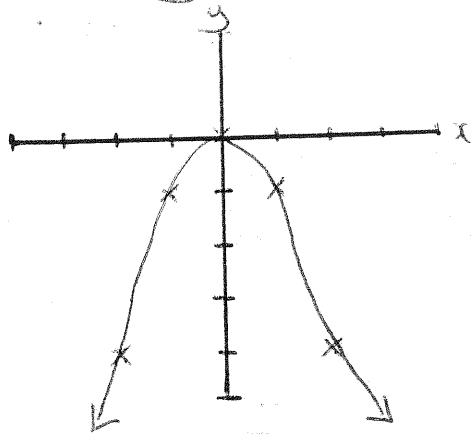


## Parabolas

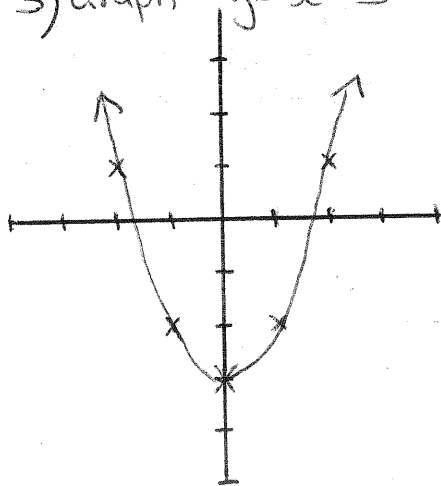
1) Graph  $y = x^2$



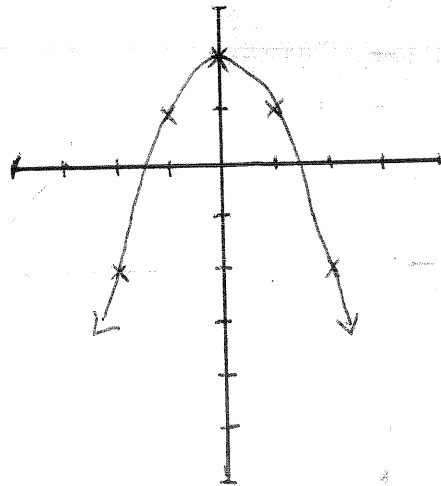
2) Graph  $y = -x^2$



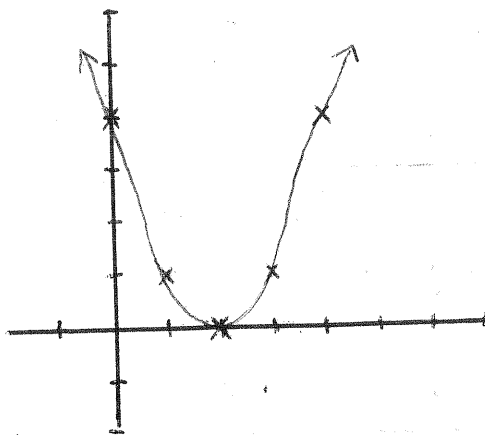
3) Graph  $y = x^2 - 3$



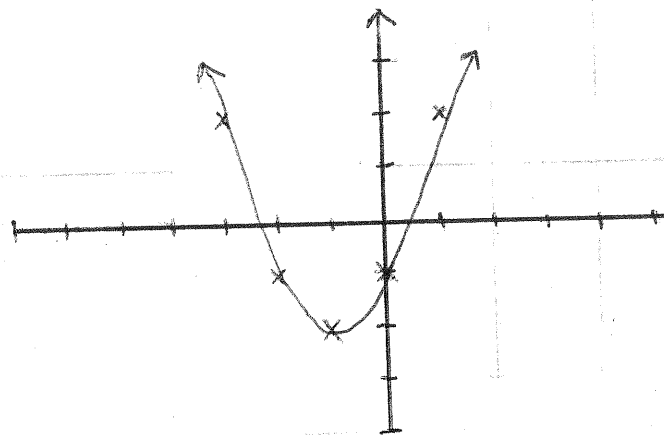
4) Graph  $y = 2 - x^2$



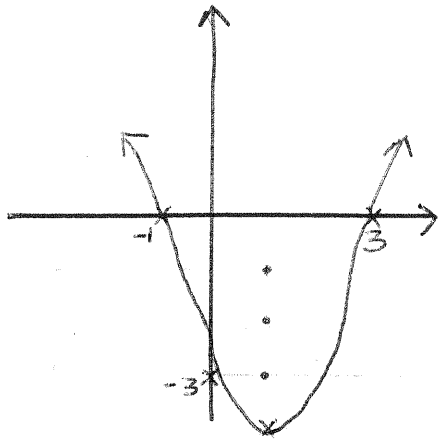
5) Graph  $y = (x-2)^2$



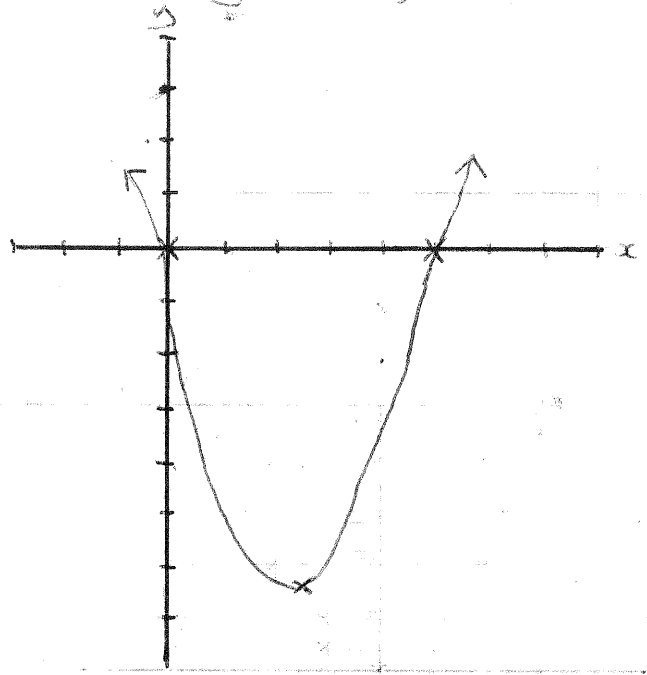
6) Graph  $y = (x+1)^2 - 2$



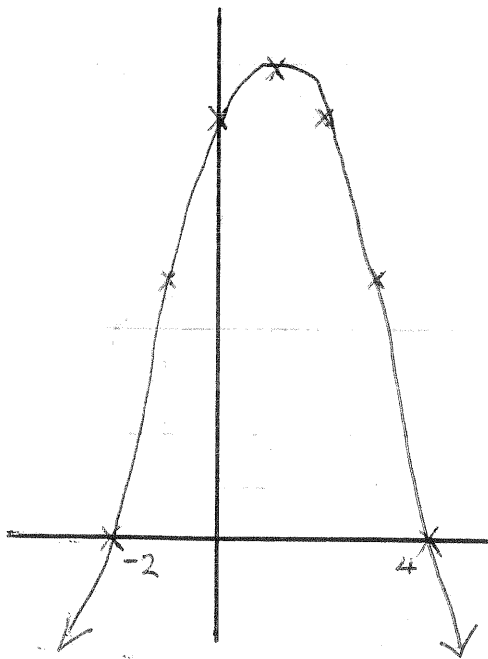
7) Graph  $y = (x+1)(x-3)$



8) Graph  $y = x(x-5)$



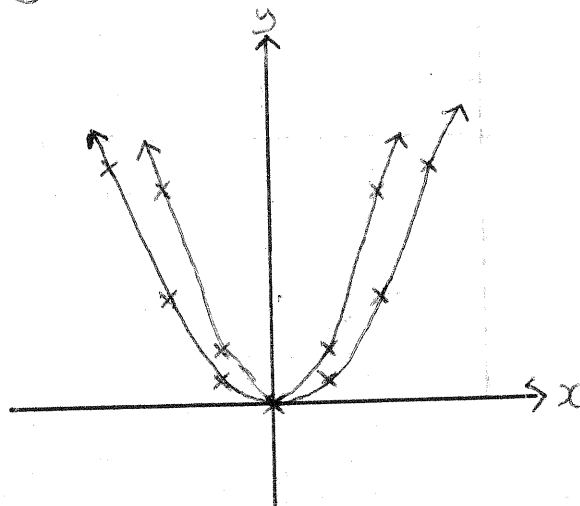
9) Graph  $y = (x+2)(4-x)$



## Changing the slope

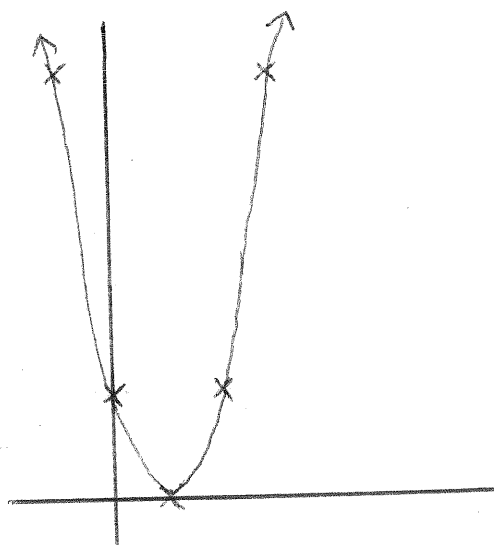
1) Graph  $y = \frac{1}{2}x^2$

x	-3	-2	-1	0	1	2	3
y	4.5	2	0.5	0	0.5	2	4.5

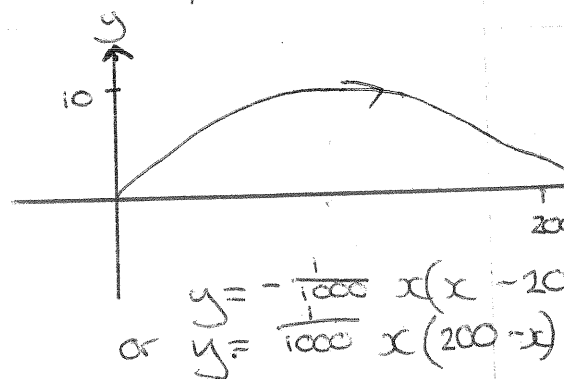


The parabola is less steep and is wider.

2) Graph  $y = 2(x-1)^2$

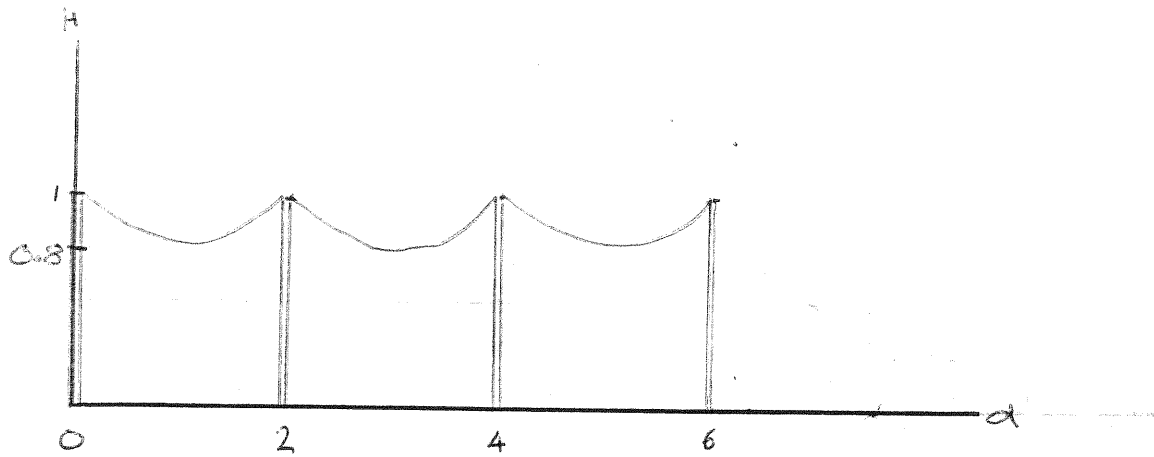


3) Write the equation of the parabola below.



$$y = -\frac{1}{1000}x(x-20)$$
$$\text{or } y = \frac{1}{1000}x(200-x)$$

4)



Find the equation of the first piece of hanging chain.

$$H = 0.2(d-1)^2 + 0.8$$