

Y12 BASELINE TEST INITIAL ASSESSMENT SAMPLE TEST

Use these questions to help prepare for your baseline test in September. Questions similar to these will appear. The exam reference has been given as well as a link to the video solution.

1. Expand and simplify $(2x + 1)(x + 1)$

(Mar 2013 Paper 2 q11b)

<http://www.youtube.com/watch?v=w44yVFttUDU>

2. Factorise

(a) $y^2 - 16$

(b) $2p^2 - p - 10$

(June 2013 Paper 2 q19b,c)

http://www.youtube.com/watch?v=XQNny_sWH0w&list=PLnKlbc4ho-u-WiS1Z4-7QA_sw4_00aiJe&index=8

3. Simplify

a) $\frac{36af^8}{12a^5f^2}$

(Nov 2013 Paper 2 q11c)

http://www.youtube.com/watch?v=SLu6OYQo6_8&list=PLnKlbc4ho-u-9wUcUmsrHXN5zD3t3I0T0&index=12

b) $\frac{x+1}{2} + \frac{x+3}{3}$

(Nov 2012 Paper 2 q20)

<http://www.youtube.com/watch?v=2t71g3EdVdM>

4. Solve the following equations

a) $\frac{4x-1}{5} + \frac{x+4}{2} = 3$

(Mar 2013 Paper 1 q17)

<http://www.youtube.com/watch?v=ID6eHJEz1nc&list=PLdFZZXxW0z8u5fV99-os3qO7Cp-ViqiBP>

b) $x^2 - 12x + 27 = 0$

(Mar 2013 Paper 1 q20aai)

<http://www.youtube.com/watch?v=9hMbX-sUVYg>

5. Find the set of values of x for which

$3(2x + 1) > 5 - 2x,$

(May 2005 C1 q6a)

<http://www.youtube.com/watch?v=6LwUqh3rHpc&list=PL767BDDE2CFBEB1D6>

6. Work out the values of the following, giving your answers as fractions where necessary.

(a) $8^{\frac{1}{3}}$.

(b) $8^{-\frac{2}{3}}$

(May 2005 C1 q1)

<http://www.youtube.com/watch?v=H0TsstAL6yw>

8. Solve the simultaneous equations

$$x^2 + y^2 = 9$$

$$x + y = 2$$

Give your answers correct to 2 decimal places.

(June 2013 Paper 2 q25)

https://www.youtube.com/watch?v=3f9JDLICHIE&feature=iv&src_vid=3f9JDLICHIE&annotation_id=annotation_2305683581#t=1h36m28s

9.

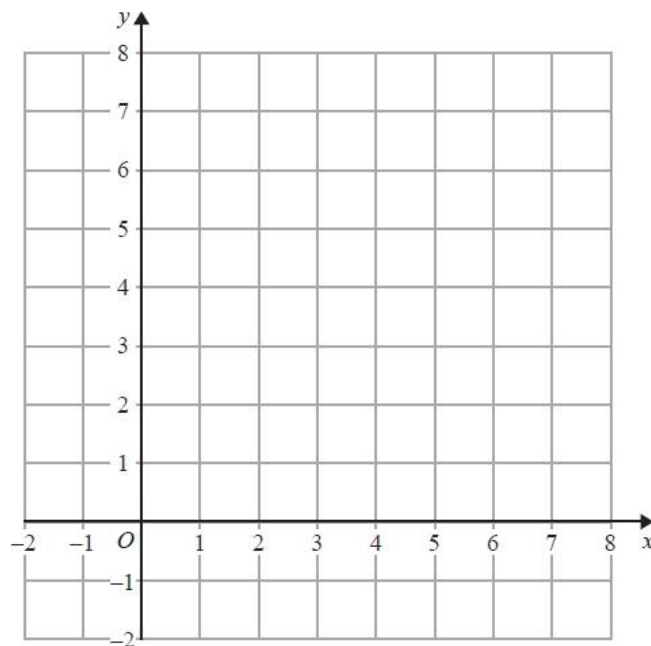
On the grid show, by shading, the region that satisfies all three of the inequalities

$$x + y < 7$$

$$y < 2x$$

$$y > 3$$

Label the region **R**.



(Paper 1 June 2015 q18)

<https://www.youtube.com/watch?v=kQZ24SB47yc>

10. The line l_1 has equation $3x + 5y - 2 = 0$

(a) Find the gradient of l_1 .

The line l_2 is perpendicular to l_1 and passes through the point (3, 1).

(b) Find the equation of l_2 in the form $y = mx + c$, where m and c are constants.

(January 2010 C1 q3)

https://www.youtube.com/watch?v=sk_Y25lzp3M

11. Solve

$$3x^2 - 4x - 2 = 0$$

Give your solutions correct to 3 significant figures.

(June 2012 Paper 2 q22)

https://www.youtube.com/watch?v=ueyKEQgPV1s&feature=iv&src_vid=ueyKEQgPV1s&annotation_id=annotation_3056868147#t=1h25m57s

12.

(a) Simplify fully $\frac{x^2 + 3x - 4}{2x^2 - 5x + 3}$

(b) Write $\frac{4}{x+2} + \frac{3}{x-2}$ as a single fraction in its simplest form.

(June 2012 Paper q23)

<https://www.youtube.com/watch?v=0YCB4RyxulQ>

12.

Find the set of values of x for which

(a) $2(3x + 4) > 1 - x$

(b) $3x^2 + 8x - 3 < 0$

(C1 June 2013 q5)

<https://www.youtube.com/watch?v=O4nCKbLRxVs>

13.

The expression $x^2 - 8x + 21$ can be written in the form $(x - a)^2 + b$ for all values of x .

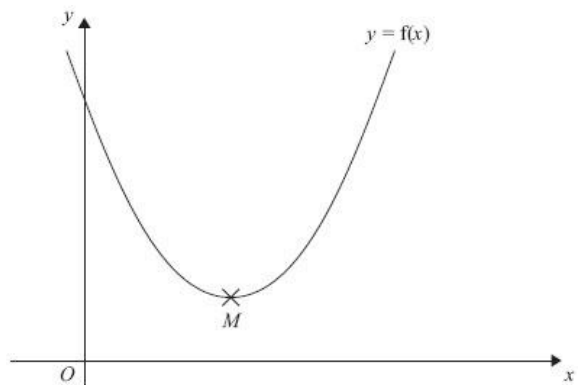
(a) Find the value of a and the value of b .

The equation of a curve is $y = f(x)$ where $f(x) = x^2 - 8x + 21$

The diagram shows part of a sketch of the graph of $y = f(x)$.

The minimum point of the curve is M .

(b) Write down the coordinates of M .



(June 2013 Paper 1 q25)

https://www.youtube.com/watch?v=14ErEpJPAAEg&feature=iv&src_vid=14ErEpJPAAEg&annotation_id=annotation_3885405581#t=1h14m53s

14. Simplify

$$\frac{5 - 2\sqrt{3}}{\sqrt{3} - 1}$$

giving your answer in the form $p + q\sqrt{3}$, where p and q are rational numbers.

(January 2011 C1 q3)

<https://www.youtube.com/watch?v=SvCTGShxaj4>

15.

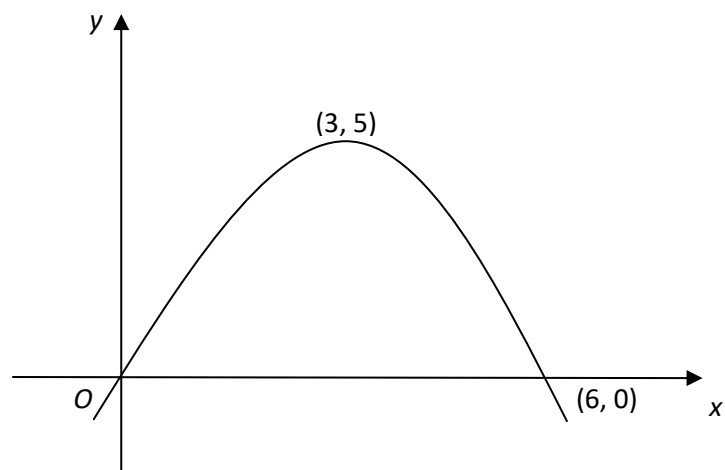
Figure 1 shows a sketch of the curve with equation $y = f(x)$. The curve passes through the origin O and through the point $(6, 0)$. The maximum point on the curve is $(3, 5)$.

On separate diagrams, sketch the curve with equation

(a) $y = 3f(x)$,

(b) $y = f(x + 2)$.

On each diagram, show clearly the coordinates of the maximum point and of each point at which the curve crosses the x -axis.



(May 2005 C1 q4)

<http://www.youtube.com/watch?v=BMzpIpdImVg&list=PL767BDDE2CFBEB1D6>