

# N5 Revision Non Calculator Practice Questions Mixed Set 1

Questions from previous SQA Exams

1 Factorise  
 $x^2 - 5x - 24$

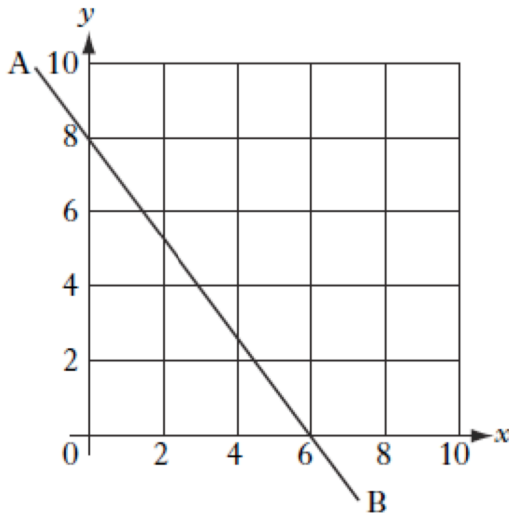
2 Multiply out the brackets and collect like terms.  
 $(x + 5)(2x^2 - 3x - 1)$

4 A straight line is represented by the equation  $x + y = 5$ .  
 Find the gradient of this line.

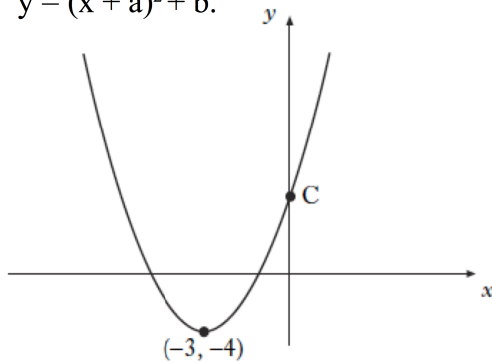
6 Simplify  

$$\frac{\cos^3 x^\circ}{1 - \sin^2 x^\circ}$$

8 Find the equation of the straight line AB shown in the diagram.



10 The diagram below shows part of a parabola with equation of the form  $y = (x + a)^2 + b$ .



- Write down the equation of the axis of symmetry of the graph.
- Write down the equation of the parabola.
- Find the coordinates of C.

3. An angle,  $a^\circ$ , can be described by the following statements.

- $a$  is greater than 0 and less than 360
- $\sin a^\circ$  is negative
- $\cos a^\circ$  is positive
- $\tan a^\circ$  is negative

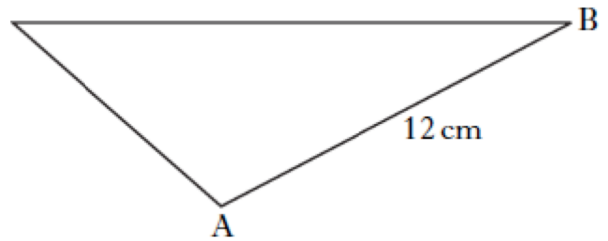
Write down a possible value for  $a$ .

5 Sketch the graph of  $y = 4 \cos 2x^\circ$   
 For  $0 \leq x \leq 360$ .

7 (a) Factorise  $x^2 + x - 6$ .

(b) Multiply out the brackets and collect like terms.  
 $(3x + 2)(x^2 + 5x - 1)$

9 In triangle ABC,  $AB = 12$  centimetres,  $\sin C = \frac{1}{2}$  and  $\sin B = \frac{1}{3}$ .



Find the length of side AC.

11 Calculate  $|\mathbf{m} + \mathbf{n}|$  the magnitude of vector  $\mathbf{m} + \mathbf{n}$ .

$$\mathbf{m} = \begin{pmatrix} 2 \\ -1 \\ 3 \end{pmatrix} \quad \mathbf{n} = \begin{pmatrix} 1 \\ -1 \\ -4 \end{pmatrix}$$

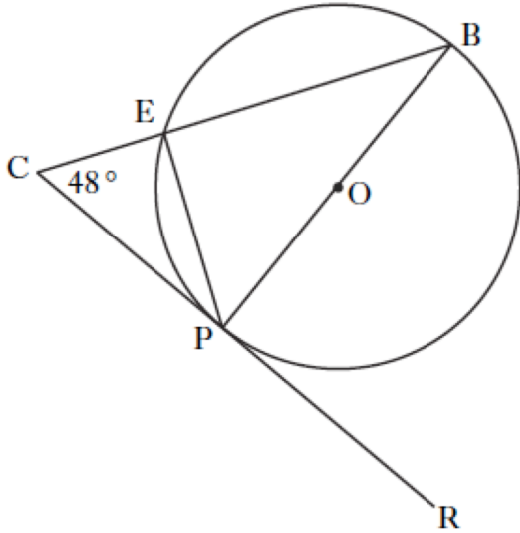
Leave your answer in surd form.

12 If  $x^2 - 6x + 14$  is written in the form  $(x - p)^2 + q$ , what is the value of  $q$ ?

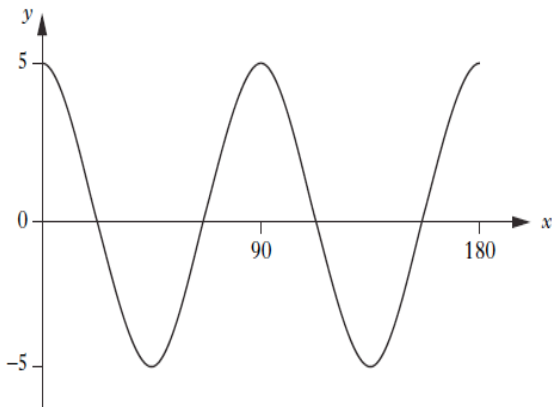
# N5 Revision Non Calculator Practice Questions Mixed Set 2

Questions from previous SQA Exams

- 1 A circle, centre O, is shown below.  
In the circle
- PB is a diameter
  - CR is a tangent to the circle at point P
  - Angle BCP is  $48^\circ$ .
- Calculate the size of angle EPR.

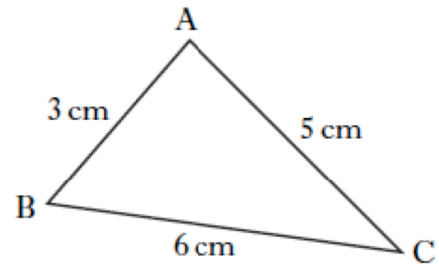


- 2 Evaluate  $9^{\frac{3}{2}}$ .
- 3 The discriminant of  $2x^2 - x + k = 0$  is 17.  
Find the value of k.
- 4 Part of the graph of  $y = a \cos bx^\circ$  is shown in the diagram.  
State the values of a and b.



- 5 Three of the following have the same value.  
 $2\sqrt{6}$ ,  $\sqrt{2} \times \sqrt{12}$ ,  $3\sqrt{8}$ ,  $\sqrt{24}$
- Which one has a different value?  
You must give a reason for your answer.

- 6 In triangle ABC, show that  $\cos B = \frac{5}{9}$ .



- 7 Multiply out the brackets and collect like terms.

$$5x + (3x + 2)(2x - 7)$$

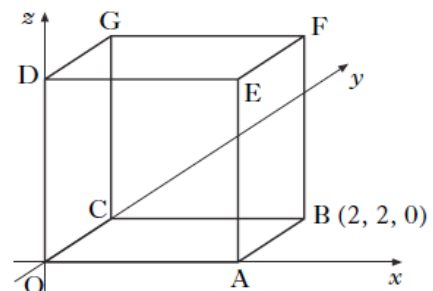
- 8 A straight line is represented by the equation  $y = mx + c$ .

Sketch a possible straight line graph to illustrate this equation when  $m > 0$  and  $c < 0$ .

- 9 Solve algebraically the system of equations

$$\begin{aligned} 2x - y &= 10 \\ 4x + 5y &= 6. \end{aligned}$$

- 10 OABCDEFG is a cube with side 2 units, as shown below.  
B has coordinates (2, 2, 0).  
Write down the coordinates of G.



# N5 Revision Non Calculator Practice Questions Mixed Set 3

Questions from previous SQA Exams

- 1(a) Brian, Molly and their four children visit Waterworld. The total cost of their tickets is £56.

Let  $a$  pounds be the cost of an adult's ticket and  $c$  pounds the cost of a child's ticket.

Write down an equation in terms of  $a$  and  $c$  to illustrate this information.

- (b) Sarah and her three children visit Waterworld. The total cost of their tickets is £36. Write down another equation in terms of  $a$  and  $c$  to illustrate this information.

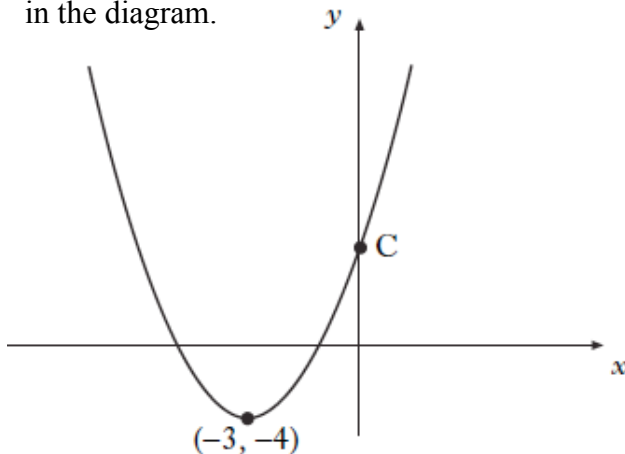
- (c) (i) Calculate the cost of a child's ticket.  
(ii) Calculate the cost of an adult's ticket.

- 2 A group of people attended a course to help them stop smoking. The following table shows the statistics before and after the course.

	Mean number of cigarettes per person per day	Standard Deviation
Before	20.8	8.5
After	9.6	12.0

Make **two** valid comments about these results.

- 3 The parabola with equation  $y = x^2 - 2x - 3$  cuts the  $x$ -axis at the points A and B as shown in the diagram.



- (a) Find the coordinates of A and B.  
(b) Write down the equation of the axis of symmetry of  $y = x^2 - 2x - 3$ .

- 4 a) Simplify  $2a \times a^{-4}$   
b) Solve for  $x$ ,

$$\sqrt{x} + \sqrt{18} = 4\sqrt{2}$$

- 5 Change the subject of the formula to  $r$ .

$$A = 4\pi r^2$$

- 6 Factorise fully  $2m^2 - 18$ .

- 7 Solve the inequality

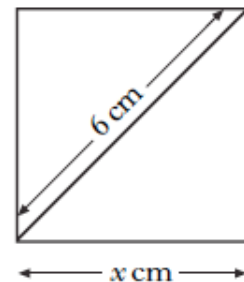
$$4x - 5 < 7x - 20.$$

- 8 There are 400 people in a studio audience.

The probability that a person chosen at random from this audience is male is  $\frac{5}{8}$ .

How many males are in this audience?

- 9 A square of side  $x$  centimetres has a diagonal 6 centimetres long.



Calculate the value of  $x$ , giving your answer as a surd in its simplest form.

- 10 Express as a single fraction in its simplest form

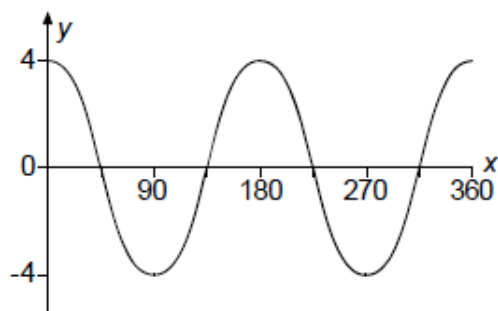
$$\frac{1}{p} + \frac{2}{(p+5)}$$

N5 Revision Non Calculator  
Practice Questions Mixed  
Set 1 Answers

- 1  $(x - 8)(x + 3)$
- 2  $x(2x^2 - 3x - 1) + 5(2x^2 - 3x - 1)$   
 $= 2x^3 - 3x^2 - x + 10x^2 - 15x - 5$   
 $= 2x^3 + 7x^2 - 16x - 5$
- 3 any answer between 270 & 360 degrees.

4 -1

5



6  $\frac{\cos^3 x^\circ}{\cos^2 x^\circ}$   
 $= \cos x^\circ$

7 a)  $(x + 3)(x - 2)$

b)  $3x^3 + 17x^2 + 7x - 2$

8  $y = -\frac{4}{3}x + 8$

9 sine rule  $\frac{AC}{\frac{1}{3}} = \frac{12}{\frac{1}{2}}$

AC = 8 cm

10 a)  $x = -3$

b)  $(x + 3)^2 - 4$

11  $\sqrt{14}$

12  $q = 5$

N5 Revision Non Calculator  
Practice Questions Mixed  
Set 2 Answers

1  $138^\circ$

2 27

3  $k = -2$

4  $a = 5$   
 $b = 4$

5  $3\sqrt{8}$  is the odd one out since  
 $2\sqrt{6} = \sqrt{4} \times \sqrt{6} = \sqrt{24}$   
 and  $\sqrt{24} = \sqrt{2} \times \sqrt{12}$

6  $\cos B = \frac{6^2 + 3^2 - 5^2}{2 \times 6 \times 3}$

$\cos B = \frac{20}{36}$

$\cos B = \frac{5}{9}$

7  $5x + (3x + 2)(2x - 7)$   
 $= 5x + 6x^2 - 17x - 14$   
 $= 6x^2 - 12x - 14$

8 1 mark for line with upward slope  
drawn on graph

second mark if line drawn cuts the  
y axis below origin

9  $2x - y = 10 \Rightarrow 10x - 5y = 50$   
 $4x + 5y = 6 \Rightarrow 4x + 5y = 6$

$14x = 56$   
 $x = 4$   
 $y = -2$

10  $(0, 2, 2)$

N5 Revision Non Calculator  
Practice Questions Mixed  
Set 3 Answers

1 a)  $2a + 4c = 56$

b)  $a + 3c = 36$

c)  $c = 8, a = 12$

2 Results are encouraging as on average the number of cigarettes smoked per day per person is lower after the course.

The higher standard deviation after the course suggests the number of cigarettes smoked per person per day was more varied after the course.

3 a)  $y = (x + 1)(x - 3)$

$A(-1, 0) \quad B(3, 0)$

b)  $x = 1$

4 a)  $2a^3$

b)  $\sqrt{x} + \sqrt{18} = 4\sqrt{2}$

$$\sqrt{x} = 4\sqrt{2} - \sqrt{18}$$

$$\sqrt{x} = 4\sqrt{2} - 3\sqrt{2}$$

$$\sqrt{x} = \sqrt{2}$$

$$X = 2$$

5  $A = 4\pi r^2$

$$r^2 = \frac{A}{4\pi}$$

$$r = \sqrt{\frac{A}{4\pi}}$$

6  $2m^2 - 18 = 2(m^2 - 9)$   
 $= 2(m + 3)(m - 3)$

7  $x > 5$

8 250

9  $3\sqrt{2}$

10  $\frac{3p + 5}{p(p+5)}$