

Foundations of Advanced Mathematics
AS Pure Mathematics Bridging Test 8

Questions

1 The units suggested for three of the following measurements are reasonable and one is unreasonable. Which one is unreasonable?

- A The mass of a mouse is measured in kilograms.
- B The capacity of a bottle of wine is measured in centilitres.
- C The distance from London to Edinburgh is measured in kilometres.
- D The area of this piece of paper is measured in cm^2 .

2 The areas of the four countries of the United Kingdom are as follows.

England	130 362 km^2
Northern Ireland	14 147 km^2
Scotland	78 749 km^2
Wales	20 761 km^2

Three of the following statements are true and one is false. Which one is false?

- A England has a larger area than the total of the other three countries.
- B Scotland is nearly 38% larger than Wales.
- C Correcting the area of England to 1 significant figure will result in an error greater than the area of Wales.
- D England has an area of approximately 50 000 square miles.

3 The human body contains approximately $6.2 \times 10^6 \text{ mm}^3$ of blood.
 1mm^3 contains approximately 4.5 million red blood cells and 700 white blood cells.

Three of the following statements are true and one is false. Which one is false?

- A There are over 6000 times as many red blood cells as there are white blood cells in any given volume of blood.
- B The human body has about 2.8×10^{13} red blood cells.
- C The human body has about 4.3×10^9 white blood cells.
- D The total number of red and white cells in the human body is about 7.1×10^{22} .

- 4 You are given that $a = 2$, $b = -3$ and $c = -2$.

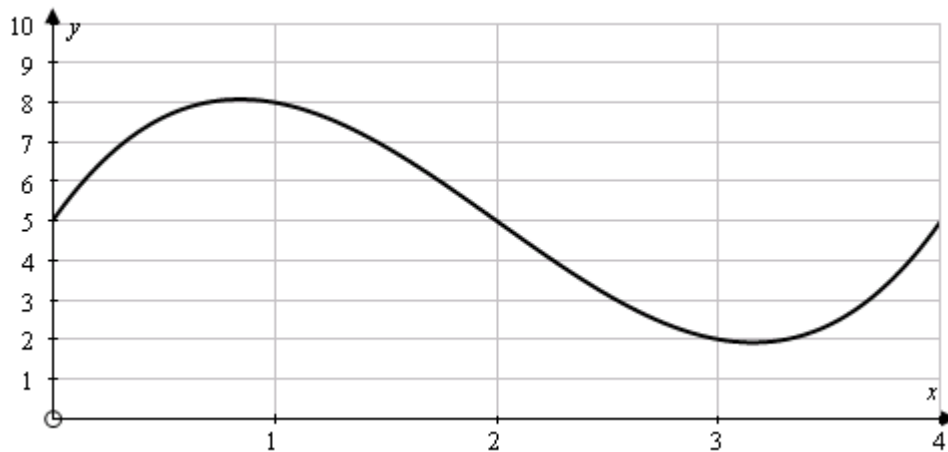
Three of the following statements are true and one is false. Which one is false?

- A $2b^2 = 18$
- B $bc - a = 4$
- C $ab + 3c = 0$
- D $ab + bc + ca + 4 = 0$

- 5 Which one of the following is a correct simplification of $\frac{3x+4}{5} - \frac{5x-2}{3}$?

- A $\frac{22-16x}{15}$
- B $\frac{2-16x}{15}$
- C $\frac{6-2x}{15}$
- D $3-x$

- 6 The diagram shows part of the curve $y = x^3 - 6x^2 + 8x + 5$.

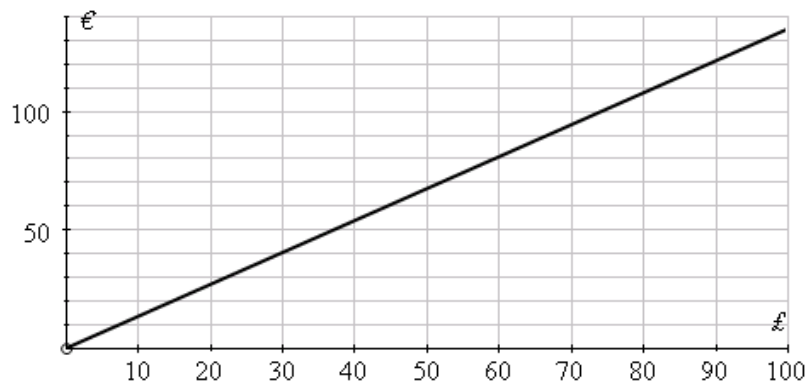


Which one of the following is the best estimate for the area enclosed by the curve, the x -axis and the lines $x = 0$ and $x = 4$?

- A 10
- B 20
- C 30
- D 40

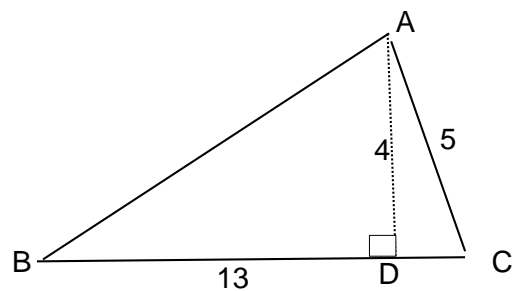
- 7 One day the exchange rate from Euros to pounds sterling is €1.35 to £1.

The graph below represents the conversion between pounds and euros at this rate.



Three of the following statements are true and one is false. Which one is false?

- A The equivalent exchange rate is 74p to 1, correct to the nearest 1p.
- B €50 is equivalent to just over £37.
- C £50 is equivalent to €67.50.
- D On another day I paid £30 for €42. The conversion graph for this exchange rate would be less steep than that drawn above.
- 8 In the triangle ABC shown, D is the foot of the perpendicular from A to BC. AD = 4 cm, AC = 5 cm and BC = 13 cm.



Three of the following statements are true and one is false. Which one is false?

- A Angle CAD = 36.9° , correct to the nearest 0.1° .
- B $\cos ACB = \frac{5}{13}$
- C $\tan ABD = \frac{4}{13}$
- D $AB^2 = 116 \text{ cm}^2$

- 9 Which **one** of the following is a **correct** factorisation of $x^2 - 5x + 6$?
- A $(x - 3)(x - 2)$ B $(x + 3)(x - 2)$ C $(x - 6)(x + 1)$ D $(x - 6)(x - 1)$

- 10 Which **one** of the following is the **correct** solution of the inequality $\frac{2x}{5} > \frac{x-1}{4}$?

A $x > -\frac{5}{3}$

B $x < -\frac{5}{3}$

C $x > -\frac{5}{13}$

D $x > -\frac{1}{3}$