Foundations of Advanced Mathematics
AS Pure Mathematics Bridging Test 4

Questions

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

   A   The lowest common multiple (LCM) of 20 and 60 is 120.

   B   7 is a factor of 35.

   C   The reciprocal of 5 is 0.2.

   D   113 is a prime number.

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

   A $(-7) - (-4) = (-3)$

   B $(-7) \times (-4) = (-28)$

   C $16 - 3 \times 5 = 1$

   D $(-4)^2 = 16$

3   The approximate distance of the moon from the earth is 250 000 miles.
   The approximate distance of the sun from the earth is 9.3×10^7 miles.

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

   A   Expressed in standard form to 2 significant figures, the approximate distance of the moon from the earth is 2.5×10^4 miles.

   B   The approximate distance of the sun from the earth is 93 000 000 miles.

   C $\dfrac{\text{Distance of the moon from the earth}}{\text{Distance of the sun from the earth}} \approx \dfrac{1}{370}$

   D $9.3 \times 10^7 + 250\,000 = 9.325 \times 10^7$

4 An excuse that parents have given for taking their children out of school during term-time is that air fares to holiday destinations are cheaper during term-time.

The table below gives some fares that airlines charged last year to fly from London in March (during term) and April (during the holidays).

Destination	Fare in March	Fare in April
Paris	£242	£244
Malaga	£475	£588
Cyprus	£531	£868
New York	£699	£1293
Miami	£1068	£1834

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

A   The greatest increase in fare was for the flight to Miami.

B   The greatest percentage increase in fare was for the flight to New York.

C   If the fare for the March flight to Malaga had been increased by 28% then the April fare would have been £608.

D   In April the fare for a flight to Jersey was £200 and this was an increase of 10%. The Fare in March was therefore £180.

5 Abdul takers part in a "triathlon" which involves a swim, a cycle and a run.
The swim is 1.5 kilometres. He completes it at a constant speed of 50 metres per minute.
The cycle is c kilometres. He completes it in 80 minutes.
The run is 10 km. He completes it in r minutes.

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

A   He takes 30 minutes to complete the swim.

B   His average speed for the cycle is $0.75c$ km h^{-1}.

C   His average speed for the run is $\dfrac{1}{6r}$ km h^{-1}.

D   His average speed for the triathlon is $\dfrac{11.5+c}{110+r}$ km h^{-1}.

6   The diagram shows a prism of length *l* and volume *V*. The cross-section is a trapezium with parallel sides *a* and *b* and height *h*.

The area of the trapezium is given by $A = \frac{1}{2}(a+b)h$.
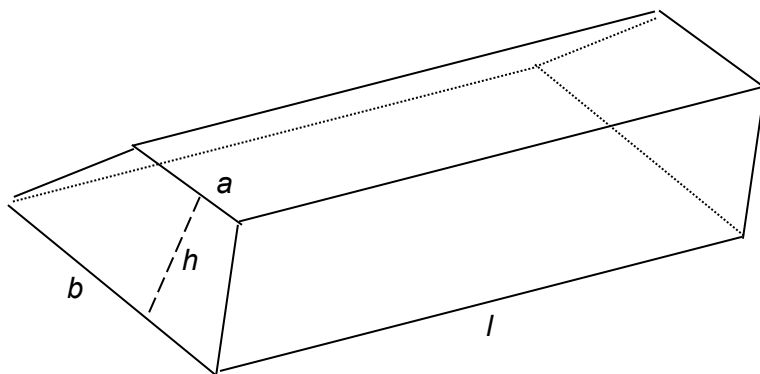
Three of the following statements are true and **one** is false. Which one is **false**?

A $V = Al$

B $b = \frac{2A}{h} - a$

C $h = \frac{A}{2(a+b)}$

D $V = \frac{hl(a+b)}{2}$

7   Three of the following statements are true and **one** is false. Which one is **false**?
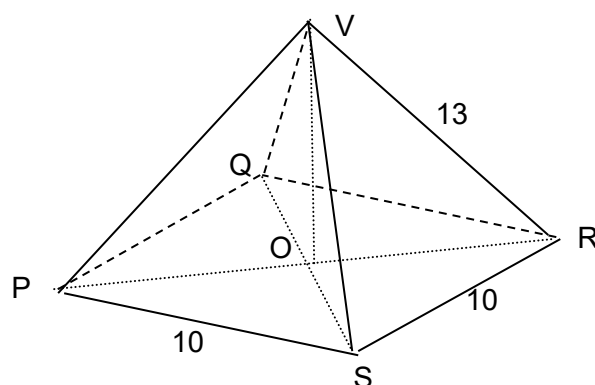
A $2^6 = 8^2$

B $3^6 \times 3^4 = 3^{10}$

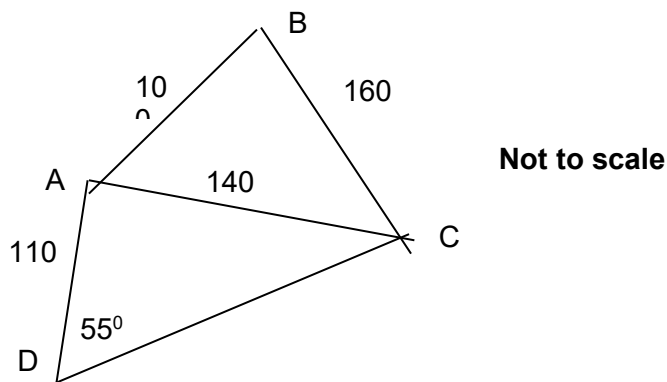C $2^3 \times 3^2 = 6^5$

D $\sqrt[5]{40} \approx 2.1$

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

    A   The solution of the equation $2(x-2) = 5 - x$ is $x = 3$.

    B   The solution of the equation $\dfrac{x+1}{3} - \dfrac{x}{4} = 1$ is $x = 8$.

    C $x = 5$ is a root of the equation $x^2 - 25 = 0$.

    D   The solution of the equation $x^2 + 5x + 4 = 0$ is $x = 1$ or $x = 4$.

9 The diagram shows a pyramid VPQRS. The vertex, V, is directly above the centre, O, of the square base, PQRS.
The length of the sides of the base are 10 cm and the length of each sloping edge is 13 cm.

Which **one** of the following is the **correct** value for the height of the pyramid?

    A $\sqrt{119}$ cm

    B $\sqrt{69}$ cm

    C $\sqrt{219}$ cm

    D $\sqrt{269}$ cm

10 A field is a quadrilateral ABCD, as shown in the diagram.
AB = 100 m, BC = 160 m, AC = 140 m, AD = 110 m and angle ADC = 55^0.

Not to scale

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

A   The angle ACD = 40^0, correct to the nearest degree.

B   The length CD = 178 m, correct to the nearest metre.

C   The angle ABC = 60^0.

D   The angle CAB = 82^0, correct to the nearest degree.