

Algebra 1 (Intermediate UKMT)

These questions must be attempted **without a calculator**

Topics covered in the questions below may not necessarily be from the topic of the title.

1. Between which of the following pairs of numbers is there the greatest difference?

A -3, 8 B -5, -13 C 1, 11 D 4, -5 E -6, -15

2. The *letter-product* of a number is obtained by multiplying the number by the number of letters in the corresponding word. For example, the letter-product of 5 is 20, since there are 4 letters in the word 'five' and $5 \times 4 = 20$.

Which of the following has the largest letter-product?

A 6 B 7 C 8 D 9 E 10

3. Think of a number, double it, then add 3. Multiply your answer by 4 and from this take away 5. Now also take away the number you first thought of.

No matter what your first number was, your answer will be a multiple of:

A 2 B 3 C 5 D 7 E 11

4. The absorptive surface of the small intestine of a typical adult has an area of approximately 200 square metres.

Which of the following has approximately the same area?

A a dartboard B a table tennis table C a football pitch
D a golf course E a tennis court

5. The square of a non-zero number is equal to 70% of the original number.

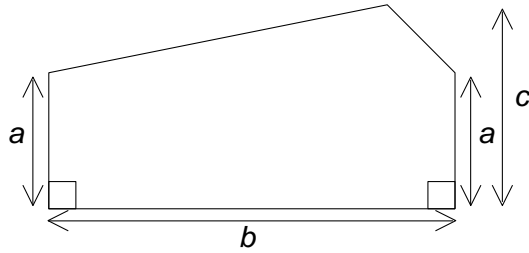
What is the original number?

A 700 B 70 C 7 D 0.7 E 0.07

6. Given that x is positive and less than 1, which of the following numbers is the largest?

- A $x^2 + x$ B x^2 C x^3 D $x^3 + x^2$ E x^4

7. What is the area of the pentagon shown?



- A $\frac{1}{2}a(b-c)$ B $\frac{1}{2}b(a+c)$ C $\frac{1}{2}a(b+c)$ D $\frac{1}{2}b(c-a)$ E $\frac{1}{2}c(a+b)$

8. In a maths exam with N questions, you score m marks for a correct answer to each of the first q questions and $m + 2$ marks for a correct answer to each of the remaining questions.

What is the maximum possible score?

- A $(m+2)N - 2q$ B Nm C $mq + (m+2)q$ D $N(m+1)$ E $Nm + q(m+2)$