

Specimen Paper

Year 9 Mathematics Scholarship Exam



Candidates answer on the question paper.

Materials required:

- Geometrical instruments
- Tracing paper (optional)

Duration: 45 mins

Candidate forename		Candidate surname	
		Mark	

INSTRUCTIONS TO CANDIDATES

- Write your name in the boxes above. Please write clearly and in capital letters.
- Answer **all** questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Show your working. Marks may be given for a correct method even if the answer is incorrect.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate name and question number(s).

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **50**.



1. Work out

(a) $\frac{7}{8} - \frac{1}{8}$

_____ [1]

(b) $1\frac{1}{2} \times 1\frac{2}{9}$

_____ [2]

(c) $\frac{1-a^2}{1-a}$ when $a = \frac{3}{5}$.

_____ [3]

(d) What is the sum of the product of a half and a third and the difference of a half and a third?

_____ [2]

2 (a) (i) Write 100 as a product of prime factors using indices.

_____ [2]

(ii) Write 10 000 as a product of prime factors using indices.

_____ [2]

(iii) A *googol* is defined as the number 10^{100} .

Write a googol as a product of prime factors using indices.

_____ [1]

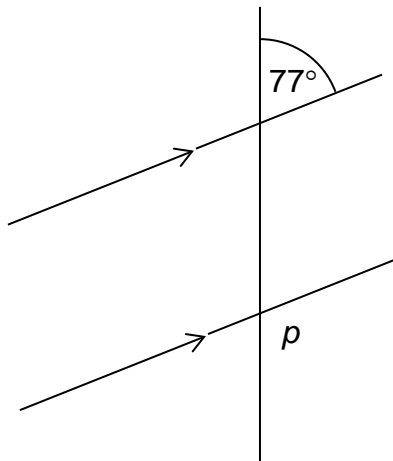
(b) (i) Find the Lowest Common Multiple (LCM) of 24 and 40.

_____ [2]

(ii) The LCM of two numbers is 96 and the Highest Common Factor (HCF) of the same two numbers is 16. Find the two numbers.

_____ [2]

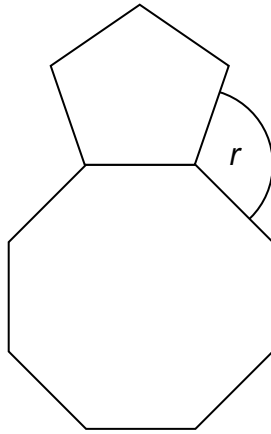
3 (a) Find angle p giving reasons for your answer.



_____ [2]

- (b) The diagram below shows a regular pentagon on top of a regular octagon. The sides of both shapes are the same length as each other.

Calculate the size of angle r showing all your working clearly.



_____ [4]

- 4 Expand and simplify where possible.

(i) $3(2y + 5)$

_____ [2]

(ii) $x(x + 3) + 2x(x + 3) - 3x(x + 3)$

_____ [3]

(b) Solve.

(i) $5x + 4 = 1$

_____ [2]

(ii) $7x - 20 = 1 - 3x$

_____ [2]

(c) Given that $\mu = 3$, $\nu = -4$ and $\xi = -6$ find the value of

(i) $\mu + \nu + \xi$,

_____ [1]

(ii) $4\mu - \xi$,

_____ [2]

(iii) $\sqrt{\mu\nu\xi + \xi^2 + \left(\frac{1}{2}\nu\right)^3}$

_____ [3]

- 5 (a) In the following calculations all the digits are correct but in the wrong places.
For example $6 \times 2 = 3$ should be $3 \times 2 = 6$.

Write these calculations correctly.

(i) $28 \times 1 = 44$

_____ [1]

(ii) $76 \times 8 = 41$

_____ [1]

(iii)
$$\begin{array}{r} 10 \\ 18 \\ \hline 282 \end{array}$$

_____ [1]

(iv)
$$\begin{array}{r} 57 \\ 53 \overline{)294} \end{array}$$

_____ [2]

(b) In the next calculations the digits are exactly one different from their correct values.
For example $16 \times 4 = 64$ would become $25 \times 3 = 75$.

Write these calculations correctly.

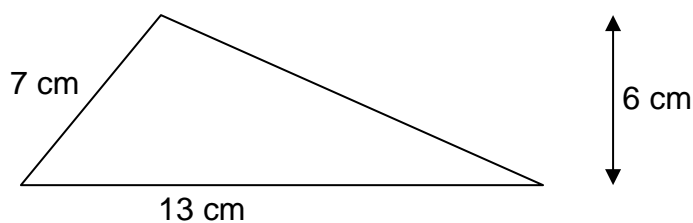
(i)
$$\begin{array}{r} 252 \times \\ \underline{\quad 6} \\ 1512 \end{array}$$

_____ [2]

(ii)
$$\begin{array}{r} 678 \\ 5 \overline{)1245} \end{array}$$

_____ [2]

(iii) Find the area of the triangle below.



_____ [3]

END