

Level 3 Test – Skills

Name

Number Facts Section 2 minutes Non-calculator

10 points minus 1 point per incorrect or missing answer. Minimum 0.

Score: /10

	Question	Answer	Tick
Q1	$7 + 2$		
Q2	$6 + 5$		
Q3	5×8		
Q4	$14 - 8$		
Q5	$3 + 8$		
Q6	$24 \div 8$		
Q7	6×7		
Q8	$15 - 7$		
Q9	$4 + 8$		
Q10	5×9		
Q11	2×7		
Q12	$24 \div 3$		
Q13	$5 + 9$		
Q14	$54 \div 6$		
Q15	$18 - 9$		

	Question	Answer	Tick
Q16	4×9		
Q17	$11 - 7$		
Q18	$8 + 5$		
Q19	$42 \div 6$		
Q20	$36 \div 4$		
Q21	5×8		
Q22	$7 + 4$		
Q23	$13 - 6$		
Q24	2×9		
Q25	$48 \div 8$		
Q26	9×9		
Q27	$64 \div 8$		
Q28	$5 + 7$		
Q29	$16 - 9$		
Q30	8×7		

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Mental Arithmetic Section 10 minutes Non-calculator

Each question is worth 1 mark. Only answers required. Scribbling paper allowed.

Score: /15

	Question	Answer	Tick
Q1	$242 + 998$		
Q2	$340 - 184$		
Q3	350×40		
Q4	$126 \div 3000$		
Q5	75.7×4		
Q6	$2\frac{3}{5} \times 750$		
Q7	$12 \div \frac{1}{5}$		
Q8	0.25×0.05		
Q9	$0.5 \div -0.02$		
Q10	$2.8 - -4.15$		
Q11	-25×-5.1		
Q12	$3\frac{1}{2} \times \frac{3}{5}$		
Q13	$1\frac{5}{6} \div 2$		
Q14	$9 - 12 \div 2 \times 5 - 3 \times 2$		
Q15	$16 - (2 + 5) \div 2 \times 2$		

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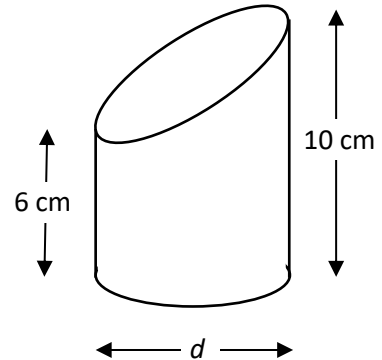
Problem Solving Section 45 minutes Calculators allowed

Work on the paper provided. Show your working and explain your thinking. You will get credit for solving the problems and for your communication. Part solutions will get part of the marks.

Problem Solving Score: /25

Communication Score: /10

<p>Q1</p>	<p>$n!$ is pronounced ‘n factorial’. It means all the counting numbers up to n multiplied together. For example, $5! = 1 \times 2 \times 3 \times 4 \times 5$.</p> <p>There are only 3 known pairs of counting numbers, n and m, for which $n! + 1 = m^2$.</p> <p>Find two such pairs.</p>	<p>/5</p>
<p>Q2</p>	<div data-bbox="343 922 1133 1527" data-label="Figure"> <p>The Raygor Graph shows a positive correlation between the number of 6+ character words and the number of sentences per 100 words. The graph is divided into two shaded regions: 'Long Sentences' (top-left, pink) and 'Long Words' (bottom-right, blue). Diagonal lines indicate reading grade levels from 3 to 14. A red dot is placed at approximately (29, 12.0), which is in the 'Long Words' region.</p> </div> <p>Use the graph above to find the reading grade level for the following paragraph.</p> <p>Once upon a time there were thirteen grizzly bears and they all cohabited together in a diminutive domicile in a forested area. One day, the matriarchal bear made porridge, some excessively hot, some excessively cold and some simply perfect. After the bears had all gone out for a morning stroll, Goldilocks entered the residence, consumed the porridge that was simply perfect, broke a chair, then fell asleep in Baby Bear's bed.</p> <p>Image: https://en.wikipedia.org/wiki/Raygor_readability_estimate#/media/File:Raygor.png</p>	

<p>Q3</p>	<p>A wooden cylinder is cut off at an angle like this:</p> <p>Its length varies from 6 cm to 10 cm.</p> <p>Its volume is $98\pi \text{ cm}^3$.</p> <p>What is its diameter, d?</p>	 <p style="text-align: right;">/10</p>
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Investigating Section

1 week

Calculators allowed

Work on the paper provided. Show your working and explain your thinking. You will get credit for what you find and for your communication.

Investigating Score: /25

Communication Score: /15

Power	Last digit
$3^5 = 243$	3
$6^2 = 36$	6
$5^5 = 3125$	5
$2^8 = 256$	6
$7^{13} = 96\,889,010,407$	7
$18^4 = 104\,976$	6

Are some digits (like 6) more common as the last digit of a power than others (like 1)?