

**FURTHER**  
**MATHEMATICS TESTS**  
**preparing for**  
**SELECTIVE SCHOOLS**  
**and**  
**SCHOLARSHIP EXAMINATIONS**

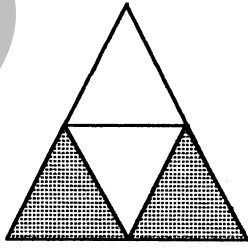
- \* **760 multiple choice questions based on previous papers**
- \* **answers to all questions with outlines of solutions to harder questions**
- \* **ideal preparation for the Selective Schools tests in N.S.W.**
- \* **ideal preparation for Independent Schools entrance and scholarship examinations throughout Australia**
- \* **conforms to National Curriculum guidelines**

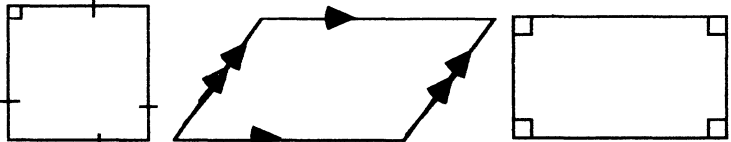
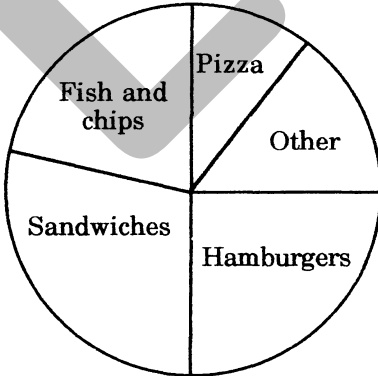
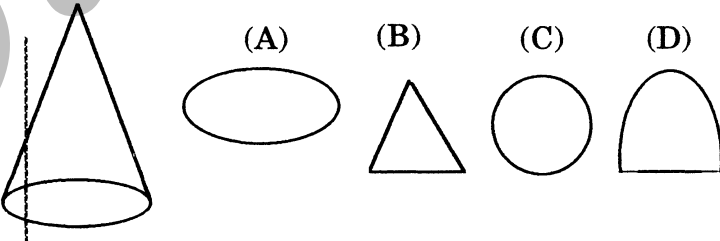

**by James An, Jim Coroneos and John Smith**

## Contents and Score

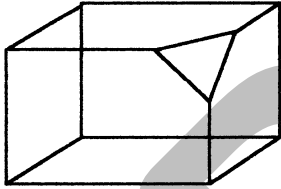
<b>Tests</b>	<b>Page</b>	<b>Your Score</b>
<b>Paper 1</b>	<b>1</b>	<b>%</b>
<b>Paper 2</b>	<b>6</b>	<b>%</b>
<b>Paper 3</b>	<b>12</b>	<b>%</b>
<b>Paper 4</b>	<b>17</b>	<b>%</b>
<b>Paper 5</b>	<b>22</b>	<b>%</b>
<b>Paper 6</b>	<b>27</b>	<b>%</b>
<b>Paper 7</b>	<b>33</b>	<b>%</b>
<b>Paper 8</b>	<b>38</b>	<b>%</b>
<b>Paper 9</b>	<b>43</b>	<b>%</b>
<b>Paper 10</b>	<b>48</b>	<b>%</b>
<b>Paper 11</b>	<b>54</b>	<b>%</b>
<b>Paper 12</b>	<b>59</b>	<b>%</b>
<b>Paper 13</b>	<b>64</b>	<b>%</b>
<b>Paper 14</b>	<b>70</b>	<b>%</b>
<b>Paper 15</b>	<b>76</b>	<b>%</b>
<b>Paper 16</b>	<b>82</b>	<b>%</b>
<b>Paper 17</b>	<b>88</b>	<b>%</b>
<b>Paper 18</b>	<b>94</b>	<b>%</b>
<b>Paper 19</b>	<b>100</b>	<b>%</b>
<b>Answers and Solutions</b>	<b>110</b>	

PAPER 1

1	$\frac{12}{18} = \frac{\square}{3}$ . The missing number in the box is	(A) 1 (C) 5	(B) 2 (D) 6
2	Divide 8 by $\frac{1}{3}$ . The answer is	(A) 24 (C) $2\frac{2}{3}$	(B) $\frac{3}{8}$ (D) $\frac{1}{24}$
3	$6.4 - 2.91 =$	(A) 9.31 (C) 3.49	(B) 3.51 (D) 4.49
4	$(0.3)^2 =$	(A) 0.6 (C) 0.09	(B) 0.9 (D) 0.06
5	A student finds the sum of the squares of 6 and 8. He then finds the square root of the answer. The answer should now be	(A) 14 (C) 100	(B) 10 (D) None of these
6	How many tenths are there in one half?	(A) 4 (C) 10	(B) 5 (D) 1
7	$2\frac{3}{4}$ hours = ..... mins.	(A) 180 (C) 170	(B) 165 (D) 140
8	$5\frac{2}{5}$ m is the same as	(A) 5m 40cm (B) 5m 20cm (C) 5m 50cm (D) 5m 5cm	
9	The diagram shows the net of a tetrahedron. What fraction of the net is shaded? 	(A) $\frac{2}{3}$ (B) $\frac{1}{3}$ (C) $\frac{1}{4}$ (D) $\frac{1}{2}$	
10	19% means 19 out of	(A) 10 (C) 90	(B) 19 (D) 100

<p>11 Express 0.44 in percentage form.</p>	<p>(A) 0.44% (B) 4.4% (C) 44% (D) 440%</p>
<p>12 Which of the following could be a trapezium only? (A) (B) (C) (D)</p> 	
<p>13 A helicopter flying north turned clockwise through <math>225^\circ</math>. In what direction is it now flying?</p>	<p>(A) SE (B) SW (C) NE (D) NW</p>
<p>14 - 15 The children in a school voted on their favourite foods. The results are shown on this sector graph.</p>	
<p>14 Which food was most popular?</p>	<p>(A) Fish and chips (B) Hamburgers (C) Pizza (D) Sandwiches</p>
<p>15 About what percentage of children preferred hamburgers?</p>	<p>(A) 20% (B) 25% (C) 50% (D) 75%</p>
<p>16 Match the cross-sectional shape with the vertical cut indicated on the cone.</p> 	
<p>17 Which of the following solids could have a top view of  ?</p>	<p>(A) Cone (B) Triangular prism (C) Square pyramid (D) Cube</p>

18	The number 7529 can be written as	(A) $750 + 29$ (B) $700 + 50 + 20 + 9$ (C) $7000 + 52 + 9$ (D) $7000 + 500 + 20 + 9$
19	The digit 6 in the number 4 176 230 represents	(A) 600 (B) 60 (C) 6 (D) 6000
20	How many kilograms in 0.65 tonnes?	(A) 65 (B) 650 (C) 1538 (D) 350
21	In a trip lasting 4hr 20min, a boat averaged 15 knots. How many nautical miles was the trip? [Note: 1 knot = 1 nautical mile per hour.]	(A) $19\frac{1}{3}$ (B) 63 (C) 65 (D) $17\frac{1}{3}$
22	In a parallelogram, the opposite angles	(A) are unequal (B) are acute (C) are equal (D) are right angles
23	$\frac{3}{5}$ of 4 km = ..... m	(A) 24 (B) 240 (C) 2400 (D) 24 000
24	If $1\text{cm}^3$ of water weighs 1 gram, what is the weight of 1 litre of water?	(A) 1000kg (B) 100kg (C) 10kg (D) 1kg
25	A train leaves a station at 9.15p.m. and arrives at its destination at 2.35p.m. the next day. How long does it take for the journey?	(A) 17h 20min (B) 5h 20min (C) 6h 40min (D) 11h 50min
26	The digits of the number 4179 are reversed to form a new number. The smaller 4-digit number is then subtracted from the larger. The answer is	(A) 5535 (B) 5355 (C) 9714 (D) None of these
27	Seven more than twice the sum of 6 and 3 is	(A) 25 (B) 81 (C) 22 (D) 47

<p>28 When the product of the digits of the number 295 is added to the sum of the digits the answer is</p>	<p>(A) 97 (B) 106 (C) 93 (D) 115</p>
<p>29 Julie has enough money to buy 2kg of cherries at \$7.50 per kg. With this money she can buy 25 apples instead of the cherries. Find the cost of each apple.</p>	<p>(A) 50c (B) 60c (C) 70c (D) \$1</p>
<p>30 For the solid shown, the letter V stands for the number of vertices, F for the number of faces and E for the number of edges. The value of <math>V + F + E</math> is</p> 	<p>(A) 26 (B) 28 (C) 32 (D) 34</p>
<p>31 As a fraction of 1 week, 63 hours is</p>	<p>(A) <math>\frac{1}{3}</math> (B) <math>\frac{1}{4}</math> (C) <math>\frac{3}{8}</math> (D) <math>\frac{5}{8}</math></p>
<p>32 A girl walks 50m in a minute. At the same rate, how long would it take her to walk a kilometre?</p>	<p>(A) 20 min (B) 10 min (C) 30 min (D) 25 min</p>
<p>33 - 34 A rectangle is 400m long and 300m wide.</p> <p>33 The perimeter in km is</p>	<p>(A) 1400 (B) 1.4 (C) 14 (D) 0.7</p>
<p>34 The area in hectares is</p>	<p>(A) 1.2 (B) 12 (C) 120 (D) 0.12</p>
<p>35 The average mass of four parcels is 2.5 kg. If three of the parcels are of mass 2.9kg, 1.3kg, 3.7kg respectively, what is the fourth mass?</p>	<p>(A) 3.1kg (B) 2.6kg (C) 2.1kg (D) 7.9kg</p>
<p>36 The volume of a closed cube is <math>27\text{cm}^3</math>. What is the total surface area in <math>\text{cm}^2</math>?</p>	<p>(A) 18 (B) 81 (C) 486 (D) 54</p>

<p>37 A flat is to be paid off by 100 monthly instalments of \$1200. How much will still have to be paid after 4 years?</p>	<p>(A) \$57 600 (B) \$177 600 (C) \$62 400 (D) \$120 000</p>
<p>38 Instead of multiplying by 2, Lee divided by 3. Lee's answer was 48. The correct answer should have been</p>	<p>(A) 32 (B) 96 (C) 72 (D) 288</p>
<p>39 Four students were talking about averages. Only one of their statements was correct. Which one is it?</p> <p>(A) Student 1: The average of 3 numbers is halfway between the smallest and largest numbers.</p> <p>(B) Student 2: If you multiply the average of 6 numbers by 6, you get the sum of these numbers.</p> <p>(C) Student 3 : The average is never the same as any of the numbers you are averaging.</p> <p>(D) Student 4: You get the average by halving the difference between the largest and smallest numbers.</p>	
<p>40 After William has given \$10 to Alexander, they have equal sums of money. What is the difference between their original sums of money?</p>	<p>(A) \$10 (B) \$20 (C) \$30 (D) \$40</p>

## FURTHER MATHEMATICS TESTS

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Solutions

### PAPER 1 (from Page 1)

1	B	2	A	3	C	4	C	5	B
6	B	7	B	8	A	9	D	10	D
11	C	12	D	13	B	14	D	15	B
16	D	17	C	18	D	19	D	20	B
21	C	22	C	23	C				

Remember that  $1\text{cm}^3$  of is the same as  $1\text{mL}$ . Hence, there are  $1000\text{cm}^3$  in 1 litre.  
And since  $1\text{cm}^3$  of water weighs  $1\text{g}$ ,  $1000\text{cm}^3$  weighs  $1000\text{g}$  or  $1\text{kg}$ .

25	A	26	A	27	A	28	B	29	B
30	C	31	C	32	A	33	B	34	B
35	C	36	D	37	C				

Lee's incorrect answer was 48. Before he divided by 3, he must have been thinking of 144 (i.e. 3 times 48). He should have multiplied this number, 144, by 2, so the correct answer would have been 288.

39	B								
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(A) is not necessarily correct. Try the average of 3, 6 and 12.  
(C) is not necessarily correct. Try the average of 4, 6 and 8.  
(D) is not necessarily correct. Try the average of 3, 6 and 12.

40	B								
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Before William gave the \$10 to Alexander, William must have had \$10 more and Alexander must have had \$10 less than the equal sums they ended up with. Hence, the difference between the original amounts would be \$20.

### PAPER 2 (from Page 6)

1	C	2	C	3	D	4	D	5	B
6	B	7	B	8	C	9	D	10	C
11	B	12	A	13	D	14	A	15	B
16	A	17	C	18	B	19	B	20	B
21	A	22	C						

This type of question is easiest done by working backwards:  
Before the student subtracted 7 he must have been thinking of 24, i.e.  $17 + 7$ .  
He was supposed to add 7 to 24, so that the correct answer would be  $24 + 7 = 31$

24	B	25	A	26	A	27	B	28	A
29	C	30	B	31	B	32	C	33	C
34	C	35	C	36	D	37	C	38	D
39	D	40	B						

### PAPER 3 (from Page 12)

1	B	2	C	3	B	4	D	5	C
6	D	7	B	8	B	9	A	10	D
11	A	12	A	13	C	14	B	15	C
16	A	17	D	18	A	19	A	20	D
21	A	22	D	23	B	24	C	25	B
26	D	27	D	28	C	29	C	30	D
31	B	32	D	33	A				

Sometimes this type of question can be done if you write the information out in a table:  
Fred's runs + Ivan's runs + Kim's runs = 222

$$\begin{array}{r} \text{Fred's runs} \\ + \text{Ivan's runs} \\ + \text{Kim's runs} \\ \hline \end{array} = 193$$

$$\text{Therefore Ivan must have scored } 222 - 193 = 29 \text{ runs}$$

$$\text{Ivan's runs} + \text{Kim's runs} = 159$$

$$\text{That is } 29 + \text{Kim's runs} = 159$$

$$\text{Therefore Kim must have scored } 159 - 29 = 130 \text{ runs}$$

35	C								
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Do this type of question by testing each pair of numbers. The answer is (C)

36	B								
37	A								

Note that Row C is the sum of rows A and B. By continuing the likely patterns in Rows A and B, we get:

$$\text{Row A: } 1, 2, 3, 4, 5, 6, 7, 8, \dots$$

$$\text{Row B: } 1, 2, 4, 8, 16, 32, 64, 128, \dots$$

$$\text{Row C: } 2, 4, 7, 12, 21, 38, 71, 136, \dots \quad \text{The answer is 136 i.e. (A)}$$