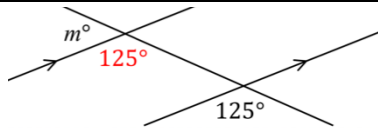
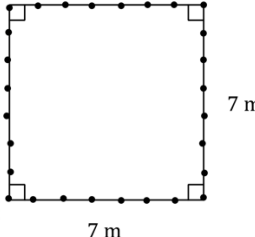


ACE Examination 2018
Year 7 Mathematics Yearly Examination
Worked solutions and marking guidelines

Section I		
	Solution	Criteria
1.	$10\,000 - 10 = 9990$	1 Mark: B
2.	$-5 - (6 - -1) = -5 - (6 + 1)$ $= -12$	1 Mark: A
3.	$6 + 7 = 13$ $6 \times 7 = 42$	1 Mark: D
4.	$2y^2 = 2 \times (3)^2 = 18$	1 Mark: C
5.	A reflex angles measures between 180° and 360° .	1 Mark: D
6.	There are 4 edges on the base and 4 edges on the sides. $\therefore$ There are 8 edges in a rectangular pyramid.	1 Mark: C
7.	$x - 2 = 18$ $x = 20$	1 Mark: C
8.	$\frac{2}{5} \times 60 = 24$ $\therefore$ The number is 60.	1 Mark: C
9.	Prime numbers are only divisible by itself and one. 16 (2×8) and 18 (2×9) are not prime. $\therefore$ 17 is the first prime greater than 15.	1 Mark: B
10.	If the probability is zero then the event is impossible.	1 Mark: B
11.	Elastic bands = \$0.60 for 100 = \$6.00 for 1000 = \$30 for 5000	1 Mark: C
12.	$x + 60 + 40 = 180$ $x + 100 = 180$ $x = 80$ Adjacent angles forming a straight line	1 Mark: D
13.	$0.05 = \frac{5}{100} = \frac{50}{1000} = \frac{1}{20}$ $\therefore 0.05 \neq \frac{5}{10}$	1 Mark: A
14.	$2x + 3x + 5y = 5x + 5y$	1 Mark: A
15.	Average time = $\frac{45.84}{4} = 11.46$ seconds	1 Mark: B
16.	5 more than x is $5 + x$	1 Mark: D
17.	Full tank = $2 \times 40 = 80$ L. Three quarters of a tank = $\frac{3}{4} \times 80 = 60$ L $\therefore$ Extra volume = $60 - 40 = 20$ L	1 Mark: A
18.	$P = 4 \times 4.2 = 16.8$ cm	1 Mark: A
19.	Corresponding angles are equal with parallel lines. $m + 125 = 180$ $m = 55^\circ$	 1 Mark: B
20.	$P(\text{Red}) = \frac{10}{50} = \frac{1}{5}$	1 Mark: D

Section II Part A		
	Solution	Criteria
21(a)	$0.6 = \frac{6}{10}$ $= \frac{3}{5}$	1 mark: Correct answer.
21(b)	$15xy + 8x + 4y + 8xy = 23xy + 8x + 4y$	1 mark: Correct answer.
21(c)	$3.75 \text{ m} = 3.75 \times 100 \text{ cm}$ $= 375 \text{ cm}$	1 mark: Correct answer.
21(d)	$\text{Percentage} = \frac{90}{120} \times 100$ $= 75\%$ $\therefore$ Hannah scored 75%.	1 mark: Correct answer.
21(e)	Area of the square $A = s^2 = 10^2 = 100 \text{ cm}^2$ Area of the shaded triangle. $A = \frac{1}{2}bh = \frac{1}{2} \times 10 \times 10$ $= 50 \text{ cm}^2$ Unshaded area = $100 - 50$ $= 50 \text{ cm}^2$	1 mark: Correct answer.
22(a) (i)	$3 \times 3 \times 3 \times 3 \times 7 \times 7 = 3^4 \times 7^2$ $= 3^4 7^2$	1 mark: Correct answer.
22(a) (ii)	$2 \times 2 \times 5 \times 5 \times 5 \times 5 \times 5 \times 5 \times 5 = 2^2 \times 5^7$ $= 2^2 5^7$	1 mark: Correct answer.
22(b)	A (-1, 1) B (2, 3) C (-3, -1) D (0, -3)	2 marks: Correct answer. 1 mark: Finds two points.
22(c)	A 750 g = \$5.20 $250 \text{ g} = \frac{\$5.20}{3} = \$1.7333\dots$ B 1 g = \$6.88 $250 \text{ g} = \frac{\$6.88}{4} = \1.72 $\therefore$ Best buy is B 1 kg for \$6.88 (cheapest)	1 mark: Correct answer.

23(a) (i)	Scores in ascending order are from smallest to largest. 4, 5, 5, 5, 6, 7, 9, 9, 10, 10	1 mark: Correct answer.
23(a) (ii)	$\text{Mean} = \frac{5 + 10 + 4 + 9 + 5 + 9 + 10 + 6 + 7 + 5}{10}$ $= 7$ Alternatively use the statistics mode on the calculator.	1 mark: Correct answer.
23(a) (iii)	Arrange the scores in increasing order. 4, 5, 5, 5, 6, 7, 9, 9, 10, 10 $\therefore$ Median is 6.5	1 mark: Correct answer.
23(b) (i)	$A = s^2$ $= 7^2$ $= 49 \text{ cm}^2$	1 mark: Correct answer.
23(b) (ii)	$A = bh$ $= 18 \times 7$ $= 126 \text{ cm}^2$	1 mark: Correct answer.
24(a)	Complementary angles add to 90° $\therefore \angle ABD$ and $\angle DBC$	1 mark: Correct answer.
24(b)	$\frac{2m}{5} = 10$ $2m = 50$ $m = 25$	1 mark: Correct answer.
24(c)	$A = \frac{1}{2}bh$ $30 = \frac{1}{2} \times 6 \times h$ $= 3 \times h$ $h = 10 \text{ cm}$ $\therefore$ Height of the triangle is 10 cm.	1 mark: Correct answer.
24(d) (i)	20:58 is in the evening. $\therefore$ 8:58 p.m.	1 mark: Correct answer.
24(d) (ii)	Train arrives at Doonside at 21:05 Time taken = 21:05 – 20:48 = 17 min	1 mark: Correct answer.

Section II Part B Advanced		
25(a)	Let the number be x $\text{Average} = \frac{x + 87}{2} = 71$ $x + 87 = 142$ $x = 55$ $\therefore$ The other number is 55	1 mark: Correct answer.
25(b)	$\text{Total paid} = 0.20 \times \$1490 + 76.50 \times 12 \times 2$ $= \$2134$ $\text{Extra} = \$2134 - \1490 $= \$644$	1 mark: Correct answer.
25(c)	Let the number be x $5 + x = 30$ $x = 25$ $\therefore$ The number is 25.	1 mark: Correct answer.
26(d) (i)	The largest possible area occurs if the rectangle is a square. The 28 m of fencing is the perimeter of the square. $\text{Side length} = \frac{28}{4}$ $= 7 \text{ m}$	1 mark: Correct answer.
26(d) (ii)	$\text{Fence posts} = 4 + 4 \times 6$ $= 28$ 	1 mark: Correct answer.
26(a)	$\text{Pills per day} = 2 \times 3 = 6$ $\text{Number of days} = \frac{48}{6}$ $= 8$ $\therefore$ The pills will run out after 8 days.	1 mark: Correct answer.
26(b) (i)	$4x + 128 = 180$ $4x = 52$ $x = 13$ (Cointerior angles are supplementary)	1 mark: Correct answer.
26(b) (ii)	$3a + 71 + 94 + 102 = 360$ $3a = 93$ $a = 31$ (Angle sum of a quadrilateral is 360°)	1 mark: Correct answer.
26(c) (i)	$\text{Cost} = \$80 + \$65h$	1 mark: Correct answer.
26(c) (ii)	$\text{Cost} = \$80 + \$65h$ $600 = 80 + 65h$ $65h = 520$ $h = 8$ $\therefore$ The locksmith worked 8 hours.	1 mark: Correct answer.