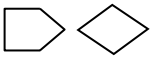
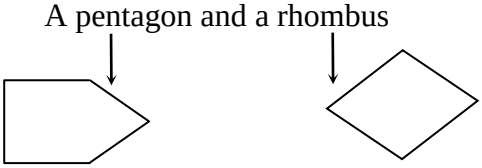
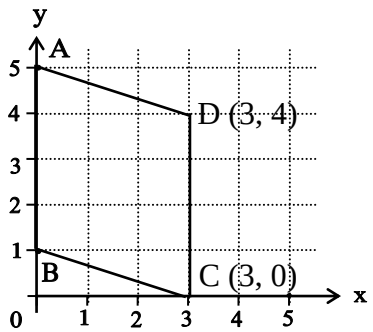
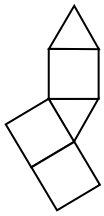
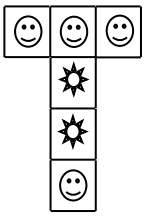
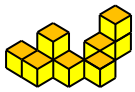
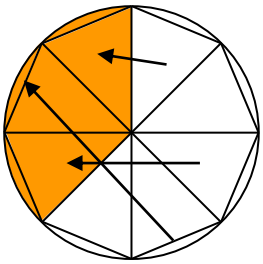
YEAR 7 – PAPER FIVE
ANSWERS AND LEARNING STATEMENT
NON CALCULATOR

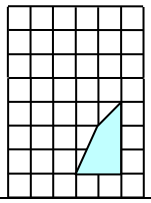
QUESTION	ANSWER	WORKED SOLUTION	LEARNING STATEMENT A student can	NSW SYLLABUS
1	300%	1 whole equals 100% so 3 equals 300%	write a whole number as a percentage.	NS 4.3
2	$14 \div 2 - 3$	Since $28 \div 7 = 4$ and the options are: $2 \div 8 = 0.25$ $14 \div 2 - 3 = 4$ $4 \times 3 - 7 = 5$ $15 \div 5 + 2 = 5$ Therefore, only $14 \div 2 - 3$ has the same value as $28 \div 7$.	find solutions to questions involving mixed operations.	NS 3.3
3	38.6°	Each interval on the scale represents 0.2°, hence the temperature indicated is 38.6°	identify a value on a simple scale.	MS 3.1
4	\$36	$\frac{1}{5}$ of \$60 is \$12, so $\frac{3}{5}$ of \$60 is \$36.	calculate with simple fractions.	NS 4.3
5	10m	The swimmer is 4 m above sea level and must dive to a depth of 6m below sea level. This indicates that the diver still has 4 + 6 = 10m to reach the box.	interpret a scale on a diagram and subtract integers.	NS 4.3
6		A pentagon and a rhombus 	identify different plane shapes.	SGS 3.2
7	36	Term 1 shows 1 rabbit. Term 2 shows 1 + 2 = 3 rabbits. Term 3 shows 1+ 2 + 3 = 6 rabbits. Term 4 shows 1+ 2 + 3 + 4 = 10 rabbits. Therefore, Term 8 will show 1+ 2 + 3 + 4 + 5 + 6 + 7 + 8 = 36 rabbits.	identify a future term given a visual representation of a linear relationship.	PAS 3.1a
8	C (3, 0) and D (3, 4)		identify the coordinates of points to complete a geometric shape on a grid.	PAS 4.5

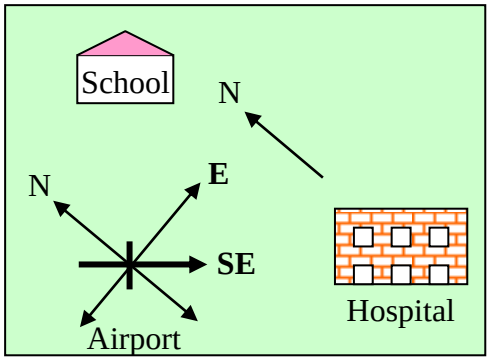
9	0.625	$\frac{5}{8}$ can be calculated by $8\overline{)5.000}^{\,0.625}$	convert a fraction to a decimal.	NS 4.3
10	8.6 m	There are 5 intervals in the 1 metre between 9m and 10m, so each interval is worth $1 \div 5 = 0.2$m. The shot is 2 intervals before 9m. Hence, it is $9 - 0.4 = 8.6$m.	identify a value on a simple scale.	MS 3.1
11	$\frac{2}{5}$	Two of the five numbers on the spinner are even, so the chance of the arrow stopping on an even number is $\frac{2}{5}$.	determine the probability of a simple event.	NS 3.5
12	36	10% of 40 is 4, so 4 roses are red. This means that $40 - 4 = 36$ roses are white.	solve a simple word problem involving percentages.	NS 4.3
13	57cm²	The area of the square is $8 \times 8 = 64$cm². Hence, the area of the star is $64 - 7 = 57$cm².	calculate the area of a square.	MS 3.2
14	One reflex angle and one obtuse angle.	The angle on the left is greater than 180° but less than 360°, hence it is reflex angle. The angle on the right is greater than 90° but less than 180°, hence it is an obtuse angle.	classify angles.	SGS 3.2b
15	66m	If 6cm represents 72 m, then 1 cm represents 12 m. The wingspan on the scale drawing is 5.5cm, which represents $5.5 \times 12 = 66$m	identify and use the scale in a scale drawing to calculate a length.	SGS 4.4
16		Only this selected net can be folded to form a triangular prism.	identify the net of a 3 dimensional object.	SGS 3.1
17	$\frac{5}{8}$	$\frac{1}{3}$ and $\frac{1}{6}$ are both smaller than $\frac{1}{2}$. $\frac{3}{4} = \frac{6}{8}$, so $\frac{7}{8}$ is bigger than $\frac{3}{4}$. Therefore, only $\frac{5}{8}$ is between $\frac{1}{2}$ and $\frac{3}{4}$.	place simple fractions in order.	NS 3.4

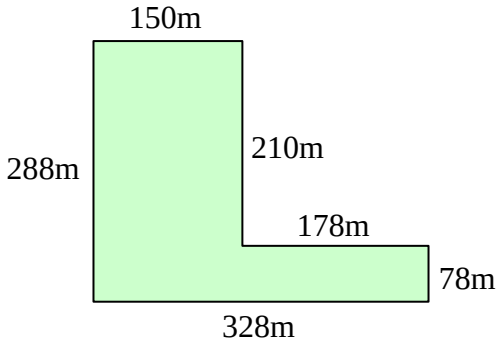
18	72	Each box costs \$20, so 3 boxes can be bought for \$60. As each box contains 24 cans, then the total number of cans bought would be $3 \times 24 = 72$ cans.	solve word problems involving multiplication and division of whole numbers.	NS 3.3
19		As there are twice as many ☺ as ☼ in the table of likely outcomes, there must also be twice as many ☺ as ☼ on the die to be used. Since there are six faces, we require four ☺ and two ☼ as shown on the selected net.	estimate the probability of an event from tabulated data.	NS 4.4
20	0.9	$0.4\overline{)0.36} = 4\overline{)3.6}^{0.9}$	perform operations with decimals.	NS 4.3
21	40%	The cost of the venue is: \$5000 – \$800 – \$550 – \$800 – \$850 = \$2000. Hence, the percentage of the total cost spent on venue is: $\frac{2000}{5000} \times 100 = 40\%$	use percentages to solve a practical problem.	NS 4.3
22	$\frac{2}{5}$	The total number of students is 8 + 9 + 3 = 20. The chance that the captain is 12 years old is $\frac{8}{20} = \frac{2}{5}$	solve probability problems involving simple events.	NS 4.4
23	90°	The semicircular gauge represents 180° and is divided into 8 equal parts. The arrow moves through 4 of these 8 parts, so it moves through a half of the 180°, which is 90°.	interpret a scale and calculate the size of an angle.	SGS 4.2
24	60cm	David's height is twice that of his son, so he is $2 \times 90 = 180$ cm tall. He is three times the height of his daughter, so she must be $180 \div 3 = 60$cm tall.	solve a word problem involving rates.	NS 4.3
25	8	For the price of 2 USB sticks he could buy $2 \times 3 = 6$ pens, so the total number of pens he would receive is 6 + 2 = 8 pens.	solve a word problem involving rates.	NS 4.3

26	24m	If a square has an area of 36m², then each edge must be $\sqrt{36} = 6$m long. Hence, the perimeter is $4 \times 6 = 24$m.	use reasoning to calculate the perimeter of a square, given its area.	MS 3.2
27	☆ = ☺ × 6 –3	☆ = ☺ × 6 – 3 is the only one of the given rules which works for all three pairs, since $2 \times 6 - 3 = 9$, $3 \times 6 - 3 = 15$ and $4 \times 6 - 3 = 21$.	identify a rule to match a linear relationship.	PAS 4.2
28	9	A solid with five flat faces and six vertices should have, according to Euler's rule, $5 + 6 - 2 = 9$ edges. Alternatively, the solid could be a triangular prism. Hence, it would have 9 edges.	describe solids in terms of their faces, edges and vertices.	SGS 4.1
29		The first of the 4 solids is the only one that matches the given side view and top view.	visualise and sketch three dimensional objects given drawings of different views.	SGS 3.1
30	$40	The first time Jenny sold the ring she made a profit of $150 – $120 = $30, and the second time she also made a profit of $200 – $170 = $30 but she has to give back the $20 she borrowed so her total profit was $60 – $20 = $40.	calculate profit and loss from a word problem.	NS 4.3
31	$\frac{3}{8}$	 If the shapes are moved as indicated by the arrows, it can be seen from the diagram that the fraction of the circle shaded is $\frac{3}{8}$.	calculate what fraction of dissected circle is shaded.	MS 4.1
32	18%	The number of students wearing hats is $\frac{9}{10} \times 500 = 450$ students. The number of students wearing hats and carrying banners is 20% of 450 = 90 students. Hence, the percentage of students wearing hats and carrying banners is $\frac{90}{500} \times 100 = 18\%$.	identify the solution of a multi step word problem involving percentages.	NS 4.3

YEAR 7 – PAPER FIVE – CALCULATOR ALLOWED

QUESTION	ANSWER	WORKED SOLUTION	LEARNING STATEMENT A student can	NSW SYLLABUS
1	1928	Hillview College was opened 75 years before 2003, therefore it was opened in 2003 – 75 = 1928.	use subtraction of whole numbers to solve a word problem.	NS 3.2
2	5000	The population of Sand Island is $7 \times 2500 = 17500$ people. Therefore, Rock Island must also have a population of 17500 people. Since on Rock Island there is one ● symbol which represents 2500 people, then the other three ▲ symbols represent 17500 – 2500 = 15000 people. Hence, each ▲ symbol represents $15000 \div 3 = 5000$ people.	solve a word problem involving rates.	NS 4.3
3	19:15	Sandra would eat her dinner after midday. To write a time after midday in 24 hour time, 12 hours must be added to that time. Hence 7:15pm, written in 24 hour time is 7:15 + 12:00, which is 19:15.	convert between am/pm time and 24 hour time.	MS 3.5
4	1	The number halfway between –2 and 4 is their average which is $\frac{-2+4}{2}=1$. Hence, 1 is the number halfway between –2 and 4.	find the value of a number halfway between two integers.	NS 4.2
5		If each side of the shape is halved, then the base should be 2 units long, and the height should be 3 units tall. Only the first shape matches these measurements.	identify similar two dimensional figures.	SGS 4.4
6	7.2m	If 1 cm represents 2m, then 3.6cm represents $3.6 \times 2 = 7.2$m. So the real length of this living room is 7.2m.	use rates to solve problems involving scale drawings.	NS 4.3
7	1 350 000	1 348 546 is between 1 340 000 and 1 350 000 but is closer to 1 350 000. Hence, the population is 1 350 000 to the nearest ten thousand.	round numbers to the nearest 10 thousand.	NS 3.1

8	2 minutes 2.6 seconds	Peter's new record time is 2.6 seconds less than 2 minutes 5.2 seconds. So, his new record time is: 2 minutes 2.6 seconds.	perform calculations of time involving mixed units.	MS 4.3
9	2401	To calculate the 5^{th} term, the rule must be applied to the 3^{rd} term and then to the 4^{th} term. Hence, the 4^{th} term is $196 \div 2 \times 7 = 686$ and the 5^{th} term is $686 \div 2 \times 7 = 2401$.	apply a rule to find a term in a sequence.	PAS 4.2
10	65°	The angle shown is less than 90°, so by reading the inner scale it can be seen that the angle indicated is 65°.	read a protractor scale to accurately measure a given acute angle.	SGS3.2b
11	1 out of 5	There are 2 cards showing puppies and 10 cards altogether, so the chance that a card with a puppy is selected is $\frac{2}{10}$ which is $\frac{1}{5}$.	solve probability problems involving simple events.	NS 4.4
12	South East		identify direction on a map.	SGS 3.3
13	$12 \div 0.75$	Before dividing, both amounts must be expressed in the same units. As 75 cents is \$0.75, then the calculation to find out how many lollies James could buy would be $12 \div 0.75$.	identify appropriate method to solve a problem involving money.	NS 3.3
14	7 500	The number of people involved in Fishing is more than a quarter but less than half of the number involved in Hospitality. Therefore, this number is more than $18000 \div 4 = 4500$ people and less than $18000 \div 2 = 9000$ people. Hence, the number of people in Fishing is about 7500 people.	interpret data presented in a sector graph.	DS 4.1
15	6	The bottle contains 1200mL. Hence, the number of 200mL cups that can be filled from it is $1200 \div 200 = 6$ cups.	solve practical problem involving metric units.	MS 3.3

<table>
<tr><td>16</td><td>2100 grams</td><td>2 kilograms is 2000grams.
So 2kg + 100g is
2000g + 100g = 2100 grams</td><td>convert between kilograms and grams.</td><td>MS 3.4</td></tr>
<tr><td>17</td><td>1 232 m</td><td> 

The missing sides are 328 – 178 = 150m and 288 – 78 = 210m. Hence, the perimeter of Mario’s land is 656 + 576 m = 1 232 m.</td><td>find the perimeter of simple composite figures.</td><td>MS 3.1</td></tr>
<tr><td>18</td><td>144 km</td><td>If Susan’s average speed was 72 km per hour, then in 2 hours she would travel 144 km. Hence, Susan travelled a distance of 144 km.</td><td>calculate distances using rates.</td><td>NS 4.3</td></tr>
<tr><td>19</td><td>62</td><td><table><tr><td>Houses Made</td><td>1</td><td>2</td><td>3</td></tr><tr><td>Number of matchsticks required</td><td>7</td><td>12</td><td>17</td></tr></table>
From the table we can see that :
Matchsticks required
= 5 × the number of houses + 2
So, the number of matchsticks used to make 12 houses is 5 × 12 + 2 = 62.</td><td>identify a future term given a visual representation of a linear relationship.</td><td>PAS 3.1a</td></tr>
<tr><td>20</td><td>$ 21</td><td>The total cost is:
180 + 200 + 250 = 630 baht. Hence, the total cost in Australian dollars is:
630 ÷ 30 = $21.</td><td>solve a practical word problem involving exchange rates.</td><td>NS 4.3</td></tr>
<tr><td>21</td><td>5 pens for $9</td><td>The value of one pen in each pack is:
1st pack : $2.50.
2nd pack : $4.50 ÷ 2 = $2.25.
3rd pack : $9 ÷ 5 = $1.80.
4th pack : $21 ÷ 10 = $2.10.
Hence, the 3rd pack represents the best value for money.</td><td>solve a practical word problem involving rates.</td><td>NS 4.3</td></tr>
</table>

22	4:40p.m.	After 20 minutes Kylie noticed the time was 3:20p.m., so the cake must have gone into the oven at 3 p.m. As it required 1 hr 40 minutes, the cake will be ready at 4:40p.m.	perform calculations of time involving mixed units.	MS 4.3
23	200	For every 1 cow Rosie owns, she has 10 sheep. So, in every group of 11 animals there is 1 cow and 10 sheep. The number of groups of 11 animals, each having one cow, is $220 \div 11 = 20$, so Rosie has 20 cows and $20 \times 10 = 200$ sheep.	solve a practical word problem involving rates.	NS 4.3
24	$ 3.80	One red rose is worth one white rose and 80 cents. Since 1 red rose and 2 white roses cost $9.80, then 3 white roses and 80 cents also cost this amount. Therefore, three white roses cost $9.80 – 80c = $9.00. This means that 1 white rose costs $9 ÷ 3 = $3.00, and hence a red rose costs $3.80.	solve a practical word problem involving ratios.	NS 4.3
25	5.05 cm	The length of wire in the square is 4×6.4 cm = 25.6 cm. The base of the pentagon is 5.4 cm, so the total length of the remaining four equal sides is 25.6 – 5.4 = 20.2 cm. Hence, each of the four equal sides of the pentagon is 20.2 cm ÷ 4 = 5.05 cm.	use reasoning to calculate the perimeter of a polygon and the length of the sides of a polygon.	MS 4.1
26	$464	The discount is 20% of $580.Therefore, the discount is $\frac{20}{100} \times \$580 = \$116$. Hence, the sale price is $580 – $116 = $464.	use percentages to calculate a discounted price.	NS 4.3
27	$\frac{3}{8}$	If $18 \div ☆ = 48$ then $18 \div 48 = ☆$ So $☆ = \frac{18}{48} = \frac{3}{8}$	use reasoning and inverse operations to calculate the value of an unknown in an equation.	NS 4.3
28	64 cm²	ABCD is a square, so BC = $\sqrt{256} = 16$ cm. As KC is half of BC, then KC = 8 cm. Hence, the area of the square KLMC is $8^2 = 64$ cm².	use multistep reasoning to solve a problem involving areas.	MS 3.2

29	372	The average number of olives in the three jars is 250, then the total number of olives in the 3 jars is: $3 \times 250 = 750$ olives. Since the number of olives in two of the jars is $220 + 158 = 378$ olives, then the number of olives in the third jar is $750 - 378 = 372$ olives.	analyse statistical data and calculate a mean to solve a two step problem.	DA 4.2
30	an obtuse angle	Any reflex angle must be smaller than 360° and larger than 180°, so the largest difference between two reflex angles must be less than $360° - 180° = 180°$ and more than 0°. This means the only angle possible, from the list provided, is an obtuse angle.	use reasoning to classify an angle.	SGS 3.2b
31	5, 1 and 2	By folding the net of the die, we can see that the sum of the top and bottom faces of an ordinary die is 7. This indicates that the sum on the top and bottom faces of three dice is $7 \times 3 = 21$. As the possible sum of the numbers on the top faces of the three dice could be either 13 or 14, then the possible sum of the bottom faces could be either $21 - 13 = 8$ or $21 - 14 = 7$. By checking each option, we realise that only '5, 1 and 2' gives as a sum of 8. All other options are incorrect as they do not give a sum of 7 or 8.	develop a strategy to solve a problem involving the net of a solid shape.	SGS 3.1
32	135°	The options given for the interior angle of the regular polygon are 110°, 115°, 135° or 145°. As the interior and exterior angles of any polygon are supplementary, then the options for the exterior angle are 70°, 65°, 45° or 35°. Each exterior angle of a regular polygon is $360° \div N$, where N is the number of angles or sides of the polygon. This also means that if we divide 360° by an exterior angle we should get N the number of sides or angles of the polygon. By checking the options: $360° \div 70°$, $360° \div 65°$ and $360° \div 35°$ do not give whole number answers. Only, $360° \div 35°$ gives an integer value for N. Hence, the interior angle of the polygon could only be 135°.	develop a strategy to solve a problem involving the angle size of a regular polygon.	SGS 5.2.1