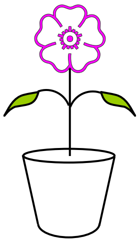
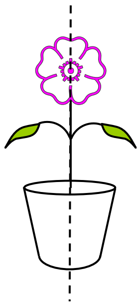
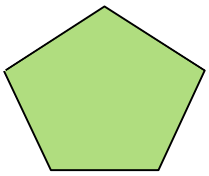
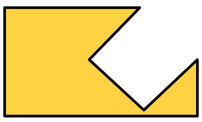
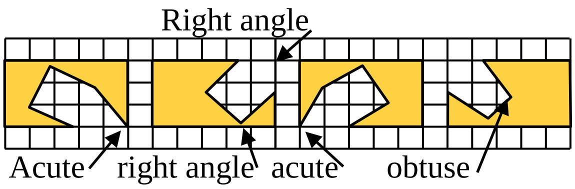
YEAR 7 – PAPER ONE
ANSWERS AND LEARNING STATEMENT
NON CALCULATOR

	ANSWER	WORKED SOLUTION	LEARNING STATEMENT A student can
1		The second and third plants have a bent stem which make a line of symmetry impossible. The leaves on the first plant are not exactly opposite each other which makes a line of symmetry impossible. Only the fourth plant has a vertical line of symmetry. 	describe translations, reflections in an axis, and rotations of multiples of 90° on the Cartesian plane using coordinates. (ACMMG181)
2	2 m 70 cm	From the diagram the length of the kayak is 2.7 m. 0.7 m is the same as 0.7× 100 cm which is 70 cm. So 2.7 m = 2 m 70 cm	convert between common metric units of length, mass and capacity. (ACMMG136)
3	100	The picture graph shows 4.5 pineapples for Saturday, which represents 4.5 × 40 = 180. The picture graph shows 2 pineapples for Sunday, which represents 2 × 40 = 80. So they sold 180 – 80 = 100 more pineapples on Saturday.	construct displays, including column graphs, dot plots and tables, appropriate for data type, with and without the use of digital technologies. (ACMSP119)
4	40%	2 out of 5 of these tiles show butterflies. This represents $\frac{2}{5}$ of the tiles. To write a fraction as a percentage multiply it by 100. $$\frac{2}{5} \times 100 = 40\%$$	find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies. (ACMNA158)
5		The first pentagon has 2 equal base angles, the two middle angles are equal and the top angle is smaller than the others. The second is a hexagon not a pentagon. The fourth shape has only 2 right angles. The third pentagon has 2 equal base angles and they are equal to the top angle, the two middle angles are equal but different in size to the other 3 equal angles, so it must be Peter's shape.	estimate, measure and compare angles using degrees. Construct angles using a protractor (ACMMG112)

<table>
<tr><td>6</td><td>1035 m</td><td>If the council planted a total of 140 trees on both sides of Rawson Street, there must be 70 trees on each side of the street.
After the first tree is planted there would be 69 more trees, each 15m apart on each side. Therefore, to find the length of this Street we multiply 69 by 15 as shown.

$\begin{array}{r} 69\ \times \\ \underline{15} \\ 345 \\ \underline{690} \\ 1035 \end{array}$

Hence, Rawson street is 1035m long.</td><td>solve problems involving the comparison of lengths and areas using appropriate units. (ACMMG137)</td></tr>
<tr><td>7</td><td>Town C</td><td>The change in Town A is 11 – (–2) = 13°C.
The change in Town B is 5 – (–4) = 9°C.
The change in Town C is –3 – (–8) = 5°C.
The change in Town D is 3 – (–3) = 6°C.

Hence, Town C has the least temperature change.</td><td>compare, order, add and subtract integers. (ACMNA280)</td></tr>
<tr><td>8</td><td></td><td>

The pentagon that Adriana drew has a right angle at the top.

The first and third shapes have acute angles where the top angle of Adriana's pentagon would fit, and so are not correct.

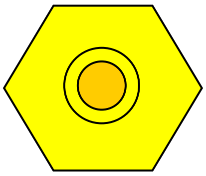
The bottom angles in Adriana's pentagon are right angles, this matches the second shape, but not the fourth shape, which has obtuse angles at the bottom.

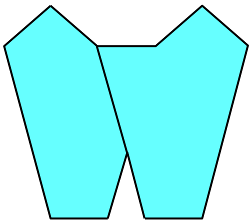
So only the second shape's angle's match Adriana's pentagon.</td><td>investigate combinations of translations, reflections and rotations, with and without the use of digital technologies. (ACMMG142)</td></tr>
<tr><td>9</td><td>5.35</td><td>The most efficient way to find a number halfway between two numbers is to add the numbers together and then divide the result by 2.

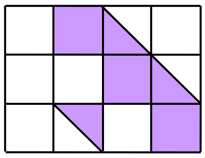
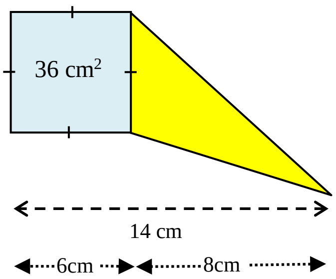
Hence, the number is

$\frac{4.6 + 6.1}{2} = \frac{10.7}{5} = 5.35$</td><td>multiply and divide fractions and decimals using efficient written strategies and digital technologies.

(ACMNA154)</td></tr>
</table>

10		Looking from the top, the view of the solid would have a darker circle in the centre, representing the circular top of the truncated cone. This would have a lighter circle around it, representing the sloping sides of the truncated cone. There would then be a lighter coloured hexagon. The sloping sides of the truncated hexagonal pyramid would not be seen, as they slope inwards. Hence, the only view matching these conditions is the first view.	draw different views of prisms and solids formed from combinations of prisms. (ACMMG161)
11	A vehicle with height 2305 mm	The maximum height of a vehicle to enter the car park is 2.3 m = 2300 mm. The only vehicle with height greater than 2300 mm is the vehicle with a height of 2305 mm. Hence, this vehicle cannot enter this car park.	convert between common metric units of length, mass and capacity. (ACMMG136)
12	4	To make a total of 79 using the least number of cards we should use the cards with the highest numbers, which are 50 and 25. Now, we still need 4 to make 79 so we have to use the two cards with 2 on them. Hence, in total we need 4 cards. **Alternative method:** As the units column of 79 contains a 9, both of the cards with 2 must be used as well as the 25. 2 + 2 + 25 = 29, so we still need 50 more. As there is a card with 50, the cards needed to total exactly 79 would be the 4 cards marked 2 + 2 + 25 + 50 = 79.	select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers. (ACMNA123)
13	36 cm	The height of the tower is 828 m = 82800 cm. As the scale is 1: 2300 then the height of the model is 82800 ÷ 2300 = 828 ÷ 23. Now, to estimate the answer we can use 82 ÷ 2 = 41. Hence, the answer is 36 cm as it the closest option to 41. To check if this is the correct answer we could multiply 36 by 23.	recognise and solve problems involving simple ratios. (ACMNA173)

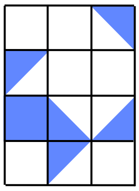
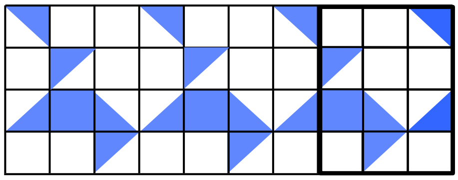
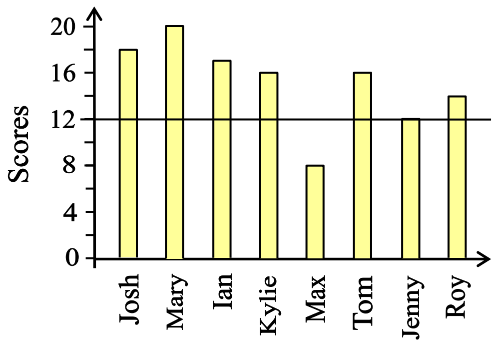
14	$12 \div 12 + 24 \div 12$	$(12 + 24) \div 12 = 36 \div 12$ $= 3$ **Alternative method:** Using the distributive law, we get: $12 \div 12 + 24 \div 12 = 1 + 2$ $= 3$, which is correct	select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers. (ACMNA123)
15	$\frac{1}{3}$	As James placed the card with number 5 back in the bag then there are now 6 cards in the bag. Only two of these six cards in the bag are less than 5, so the chance that the number on the second card selected is less than 5 is $\frac{2}{6} = \frac{1}{3}$.	assign probabilities to the outcomes of events and determine probabilities for events. (ACMSP168)
16	11:11	As Melanie arrived at 9:48 a.m., this means she had missed the 9:47 train. The 10:10 train is cancelled and the 10:33 train does not stop at Top View Station. Hence, the train that Melanie must catch leaves Rocky Bay at 10:56 a.m. and arrives at Top View at 11:11 a.m.	interpret and use timetables. (ACMMG139)
17	Two hexagons	Since the logo is made by using two different shapes with no gaps, then by drawing a line, as shown, we find these two shapes.  Hence, Paul used two hexagons to make the logo.	compare and describe two dimensional shapes that result from combining and splitting common shapes, with and without the use of digital technologies. (ACMMG088)
18	72	There are 10 equal divisions between 0 and 60 km/h, so each division must indicate 6 km/h. The arrow is pointing to a division 2 past 60. Hence, the speed of the car is $60 + 2\times 6 = 72$ km/h.	use scaled instruments to measure and compare lengths, masses, capacities and temperatures. (ACMMG084)

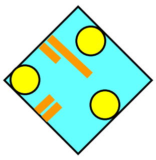
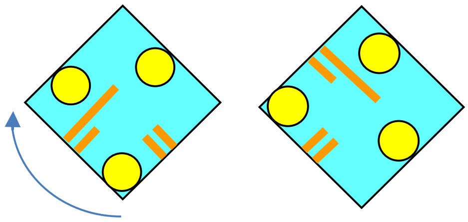
19		Each of the rectangles contains 12 squares. The required rectangle should have $\frac{3}{8} \times 12 = 4\frac{1}{2}$ squares shaded. Only the third rectangle has $4\frac{1}{2}$ squares shaded. Note: the first rectangle has $3\frac{1}{2}$ squares shaded, the second rectangle has $3\frac{1}{2}$ squares shaded and the fourth rectangle has 5 squares shaded.	express one quantity as a fraction of another, with and without the use of digital technologies. (ACMNA155)
20	4 hours	The plane travels 2520 km in 3 hours. This means it travels $2520 \div 3 = 840$ km in one hour. So the time needed to travel the entire distance of 5880 km is $5880 \div 840 = 7$ hours. Hence, the plane will reach Sandy beach in 4 more hours.	recognise and solve problems involving simple ratios. (ACMNA173)
21	20 cm	When the ribbon is wrapped around the box as shown, it must cover 40 + 40 = 80 cm for the top and bottom of the box. There will be 120 – 80 = 40 cm left. As this has to be long enough to wrap around the two sides, they must each be 40÷2 = 20 cm long, so the box is 20 cm high.	select and apply efficient mental and written strategies to solve problems involving all four operations with whole numbers. (ACMNA123)
22	24 cm^2	As the area of the square is 36cm^2 then the length of each side is 6 cm. So the height of the triangle must be 14 – 6 = 8 cm and its base is 6 cm.  Hence, the area of the triangle is $\frac{1}{2} \times 6 \times 8 = 24\text{cm}^2$	establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving. (ACMMG159)
23	about three quarters of an hour	Jessica wants to swim for 5 hours which is $5 \times 60 = 300$ minutes. In the first 3 days she swam 70 minutes per day, so she swam $3 \times 70 = 210$ minutes. On the 4th day she swam 48 minutes. Hence, Jessica needs to swim for $300 - (210 + 48) = 42$ more minutes. So the best answer is about three quarters of an hour.	solve simple time problems. (ACMMG086)

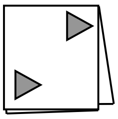
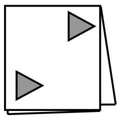
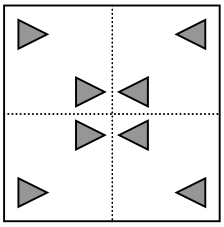
24	120	Surfing has 6 sections and Swimming has 4 sections, so Surfing has 2 more sections than Swimming. These 2 sections represent 16 students, so each section represents 8 students. As the total number of sections is $2 + 6 + 3 + 4 = 15$, then the total number of students in year 7 at this school is $15 \times 8 = 120$.	construct displays, including column graphs, dot plots and tables, appropriate for data type, with and without the use of digital technologies. (ACMSP119)
25	$\frac{-1}{24}$	To subtract fractions their denominators must be the same. Hence, $\frac{7}{12} - \frac{5}{8} = \frac{14}{24} - \frac{15}{24} = \frac{-1}{24}$	solve problems involving subtraction of fractions, including those with unrelated denominators. (ACMNA153)
26	36 cm	The perimeter of the new shape will be the sum of the perimeters of the 2 triangles that is $24 + 24 = 48$ cm, if they were not touching. But as there is a common interval of length 6 cm between the two triangles and inside the new shape, then the perimeter of the shape formed is $48 - 2 \times 6 = 36$ cm.	find perimeters and areas of parallelograms, trapeziums, rhombuses and kites. (ACMMG196)
27	\$ 144.70	From the graph we can see that the cost of hiring the boat for 7 hours is \$506.45. So, the cost of hiring the boat for 1 hour is \$506.45 ÷ 7 = \$72.35. Hence, the cost of hiring this boat for 2 hours is 2 × \$72.35 = \$144.70.	investigate, interpret and analyse graphs from authentic data. (ACMNA180)
28	7	We have $2 \times \square = 98 \div \square$ Dividing by 2 on both sides, we get: $\square = 49 \div \square$ that is $\square \times \square = 49$ Hence, the missing number in the square is 7. **Alternative method:** To find the number we use trial and error. If $\square = 10$, $2 \times 10 = 20$ and $98 \div 10 = 9.8$ So 10 is too big. If $\square = 5$, $2 \times 5 = 10$ and $98 \div 5 = 19.6$ So 5 is too small. If $\square = 7$, $2 \times 7 = 14$ and $98 \div 7 = 14$ So 7 is the missing number in the square.	select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers. (ACMNA123)

29	145	Each bag contains 5 + 3 = 8 lollies. So Tom filled 232 ÷ 8 = 29 bags. As each bag contained 5 strawberry lollies, then Tom had 29 × 5 = 145 strawberry lollies.	select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers. (ACMNA123)
30	$4800	There are 5 divisions between $0 and $2000, so each division on the profit axis represents $2000 ÷ 5 = $400. In the first week the profit was $3600. In the second week the profit was $5200. In the third week the profit was $5600. The total profit over three weeks was $3600 + $5200 + $5600 = $14400 Hence the weekly average profit over these 3 weeks is $14400 ÷ 3 = $ 4800.	investigate, interpret and analyse graphs from authentic data. (ACMNA180)
31	170 m	Four laps of the park are 3.56 km long which is 3560 m. So each lap or the length of the footpath around the park is 3560 ÷ 4 = 890 m. As DC is 210 m long, then the 4 equal parts of the path have a total length of 890 – 210 = 680 m. So to find one part, which is AB, we divide 680 by 4 we get 170 m.	select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers. (ACMNA123)
32	$33.60	Pupa has a mass of 10 kg, which is in the 7 kg to 12 kg category. Hence, as Pupa is a puppy it will require 400 g per day. So in 10 weeks or in 70 days Pupa needs 70 × 400 g = 28000 g = 28 kg of food. Now, as each can contains 4 kg then the total number of cans needed to feed Pupa is 28 ÷ 4 = 7 cans. Hence, the cost of feeding Pupa over 10 weeks is $4.80 × 7 = $33.60.	select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers. (ACMNA123)

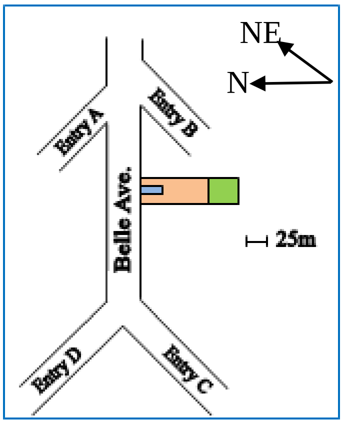
YEAR 7 – PAPER FOUR – CALCULATOR ALLOWED

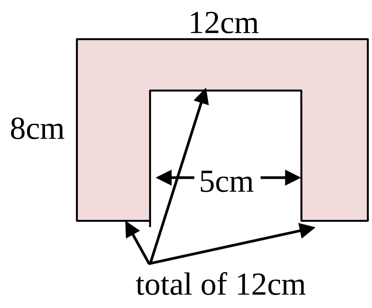
	ANSWER	WORKED SOLUTION	LEARNING STATEMENT A student can
1		 The missing piece which completes the tessellation is as shown.	describe translations, reflections in an axis, and rotations of multiples of 90° on the Cartesian plane using coordinates. (ACMMG181)
2	$\frac{1}{8}$	 After drawing a horizontal line through 12, it can be seen that only 1 student out of the 8 students scored less than 12. Hence, the probability of randomly selecting a student who scored less than 12 is $\frac{1}{8}$.	assign probabilities to the outcomes of events and determine probabilities for events. (ACMSP168)
3	25 August	Counting 14 days back from 8 September we get 25 August.	interpret and use timetables. (ACMMG139)
4	Eggs, milk, and strawberries	The cost of the second option which is eggs, milk and strawberries is \$4.05 + \$5.30 + \$4.65 = \$14. As Stephanie paid \$14, she bought these items. The cost of the first, third and fourth options do not add up to \$14. So they are incorrect.	solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies. (ACMNA080)

5	12	There are 4 different hats to choose from. For each of these hats there are 3 masks which are possible. So the total number of combinations that Mel could make is four lots of three, which is12.	list outcomes of chance experiments involving equally likely outcomes and represent probabilities of those outcomes using fractions. (ACMSP116)
6	One hexagon and six triangles	A hexagonal pyramid has a hexagonal base. There is a triangle on each of the six edges of the hexagonal base, which means that there will be 6 triangles. Hence, the net of a hexagonal pyramid is made up of one hexagon and six triangles.	connect three-dimensional objects with their nets and other two-dimensional representations. (ACMMG111)
7		 The shape has a dot in the lowest corner, when this corner is rotated 90° clockwise it will end up in the left side as shown above.	describe translations, reflections and rotations of two-dimensional shapes. Identify line and rotational symmetries. (ACMMG114)
8	Donna	Donna and Jane each achieved the highest score of 9.75 on beam. Of these two, Donna scored the lowest on Bars.	interpret and compare a range of data displays, including side-by-side column graphs for two categorical variables. (ACMSP147)
9	6	In the first week Mr Smith gave 12 awards. In the second week, he gave 14 awards, 8 of these were to students who had not had received an award in the first week. This means that the other 6 awards went to students who already received an award in the first week.	select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers. (ACMNA123)
10	20%	The percentage of rings with black crystals is $\frac{4}{20} \times \frac{100}{1} = 20\%$.	find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies. (ACMNA158)

11	67	The star represents 50, the smiley face represents 10 and the 2 rings with the flower on top represents 7. Hence, the number represented is 50 + 10 + 7 = 67.	compare, order and make correspondences between collections, initially to 20, and explain reasoning. (ACMNA289)
12		Only this piece has triangles cut out facing the same way as the triangles in the unfolded piece shown.  Also, it fits exactly into the bottom left hand corner. 	describe translations, reflections in an axis, and rotations of multiples of 90° on the Cartesian plane using coordinates. Identify line and rotational symmetries. (ACMMG181)
13	$\frac{15}{24}$	John sleeps for 9 hours each day, this means he must be awake for 24 – 9 = 15 hours. So he is awake for $\frac{15}{24}$ of a day.	express one quantity as a fraction of another, with and without the use of digital technologies. (ACMNA155)
14	b, a, c	From the diagram, angle **c** is a little bigger than 90^0. Angle **a** is a little bigger than **c** and angle **b** is the largest. So the order from largest to smallest is b, a, c.	estimate, measure and compare angles using degrees. (ACMMG112)
15	(16, 45)	The maximum height of the seat is 60 m. So the three quarters of the height is $\frac{3}{4} \times 60 = 45$m. At the start the height of the car was 0, after 1 minute it is moving up and reaches 45m. This same situation repeats itself every 3 minutes, that is when the time is 4 minutes, 7 minutes, 10 minutes, 13 minutes, 16 minutes. Hence, (16, 45) is the only point in the options provided where the seat is moving upwards and reaches $\frac{3}{4}$ of its maximum height.	investigate, interpret and analyse graphs from authentic data. (ACMNA180)
16	13	There are 21 more monkeys than lions and 47 monkeys and lions altogether. To obtain an equal number of monkeys and lions, we subtract 21 from 47 so we get 26. Hence, the number of lions is 26 ÷ 2 = 13 and the number of monkeys is 13 +21 = 34.	select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers. (ACMNA123)

17	26	Grace is 49 Earth years old, this is $49 \times 365 = 17885$ days. To convert this to Mars years we must divide it by the number of days in a Mars year. $17885 \div 687 = 26.033\ldots$ Hence, Grace is about 26 Mars years old.	select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers. (ACMNA123)
18	–	$80 + 20 \times 5$ $= 80 + 100$ $= 180$ $340 - 160$ $= 180$ Hence, the missing sign is –	select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers. (ACMNA123)
19	180	The easiest way to work out the answer is to check the given options. Let us check the first option 280, we get $280+(280+80) + (280+160) + (280+240) = 1600$ This answer is 400 more than 1200, so each week she must sell 100 less. Hence, Rachel must have sold 180 in the first week. By checking this option ,we get $180+(180+80) + (180+160) + (180+240) = 1200$ which is valid.	select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers. (ACMNA123)
20	297 km	As 45% of the distance is 243 km then 1% of the distance is $243 \div 45 = 5.4$ km. John has driven 45% of the distance to reach the resort , so he still has to drive 100% - 45% = 55% of the distance. Hence, the distance he still need to drive $5.4 \times 55 = 297$ km.	find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies. (ACMNA158)
21	16.2	If 2000 bricks have a mass of 5.4 tonnes, then 1000 bricks will have a mass of 2.7 tonnes. Hence, the mass of 6000 bricks is $6 \times 2.7 = 16.2$ tonnes.	recognise and solve problems involving simple ratios. (ACMNA173)

22	108	2 students watched 0 movies, giving a total of 0. 6 students watched 1 movie, giving a total of 6. 18 students watched 2 movies, giving a total of 36. 9 students watched 3 movies, giving a total of 27. 6 students watched 4 movies, giving a total of 24. 3 students watched 5 movies, giving a total of 15. Hence, the total number of movies watched is $0 + 6 + 36 + 27 + 24 + 15 = 108$	interpret and compare a range of data displays, including side-by-side column graphs for two categorical variables. (ACMSP147)
23	128	The number of trees planted in Hill Park is $\frac{45}{100} \times 320 = 144$. The number of trees planted in View Park is 48. So the total number of trees planted in these two parks is $144 + 48 = 192$. Hence, the number of trees planted in Central Park is $320 - 192 = 128$.	interpret and compare a range of data displays, including side-by-side column graphs for two categorical variables. (ACMSP147)
24	144 m^2	The area of the front of the smaller house has 16 squares in the rectangle and 2 squares in the triangle, giving a total of 18 square units. The area of the front of the larger house has 30 squares in the rectangle and 6 squares in the triangle, giving a total of 36 square units. This means the area of the larger house is twice the area of the smaller house. Hence, this area is $2 \times 72 = 144$ m^2.	recognise and solve problems involving simple ratios. (ACMNA173)
25	Entry B	 The scale on the map is 4 mm = 25 m. So 100 m = 16 mm. The intersection of Entry A and Entry B is 16 mm from the house, so Chris must walk along one of these 2 streets. As his house faces North, walking North East to Belle Ave means he must be coming from Entry B.	recognise and solve problems involving simple ratios. (ACMNA173)

26	1337.5 litres	The mean number of containers per month is $\frac{480+530+560+570}{4} = \frac{2140}{4} = 535$ Hence, the mean number of litres sold is $535 \times 2.5 = 1337.5$ litres.	calculate mean, median, mode and range for sets of data. (ACMSP171)
27	\$ 63.60	Last year Chantal bought $19.2 \div 1.2 = 16$ bottles of oil. She paid $16 \times \$14.10 = \$225.60$ To buy 19.2 litres in 4 litre tins Chantal would need to buy $19.2 \div 4 = 4.8$ which is 5 tins. The cost of 5 tins is $5 \times \$32.40 = \$162$. Hence, Chantal would save $\$225.60 - \$162 = \$63.60$.	recognise and solve problems involving simple ratios. (ACMNA173)
28	75°	To find the minimum size of the largest angle, the other angles must be as big as possible. If the size of the smallest angle is 40°, then the next smallest angle would be 15° less than twice 40° that is $2 \times 40° - 15° = 65°$. So, the largest sum for the two smallest angles is $40° + 65° = 105°$. Hence, the minimum size of the largest angle is $180° - 105° = 75°$	demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral (ACMMG166)
29	225	The area of the picture is $12 \times 7.5 = 90\text{cm}^2$. The area of the part shown is $6 \times 3 = 18\text{cm}^2$. So this part is $\frac{18}{90} = \frac{1}{5}$ of the total area. Hence, the best estimate for the number of sheep in the whole picture is $5 \times 45 = 225$.	solve a range of problems involving rates and ratios, with and without digital technologies. (ACMNA188)
30	50 cm	The original area of the rectangle is $8 \times 12 = 96\text{cm}^2$. The new shape is 71cm^2, so the missing square has an area of $96 - 71 = 25\text{cm}^2$. This means each side of the square is 5 cm long.  Hence, the new perimeter is $12 + 12 + 5 + 5 + 8 + 8 = 50$ cm	establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving. (ACMMG159)

31	5	As there are less red markers than the other two colours, then the number of red makers should be less than 8. So let us check the possibilities of the red markers starting from the maximum of 7, then down to 6 then to 5 and so on until a suitable combination is found. If there were 7 red markers, then the blue markers should be at least 8 and as there are three more black markers than blue, then the black markers should be at least 11. But this gives a total of 26 so it is not possible. If there were 6 red markers, then the blue markers should be at least be 7 and as there are three more black markers than blue, then the black markers should be at least 10. But this gives a total of 23 so it is not possible. If there were 5 red markers then the blue markers should be at least 6 blue and as there are three more black markers than blue, then the black markers should be at least 9. As this gives a total of 20, then we need to add more blue and black markers to make a total of 24. Hence, by keeping the number of red markers as 5 and by changing the possible number of blue markers to 8 and the black to 11 markers we get a total of 24 as required.	select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers. (ACMNA123)
32	160 g	The difference in the fractions of honey when the jar is $\frac{3}{4}$ full and when the jar is $\frac{2}{5}$ full is $\frac{3}{4} - \frac{2}{5} = \frac{15}{20} - \frac{8}{20} = \frac{7}{20}$. The mass of this fraction $\frac{7}{20}$ of the honey is the difference in mass which is 565 – 376 = 189 g. So the mass of $\frac{1}{20}$ of the honey is 189 ÷ 7 = 27 g. Therefore, the total mass of the honey is 27 × 20 = 540 g. Now, the honey in jar when it is $\frac{3}{4}$ full is $\frac{3}{4} \times 540 = 405$ g. Hence, the mass of the empty jar is 565 – 405 = 160 g.	solve problems involving addition and subtraction of fractions, including those with unrelated denominators. (ACMNA153)