Paper 12

Test time: 90 minutes

1 Write these temperatures in order, starting with the highest. (1)

−18 °C −23 °C −7 °C −28 °C −6 °C −11 °C −19 °C

_____ _____ _____ _____ _____ _____ _____

2 Last Tuesday, the temperature in the Sahara Desert was 52 °C and the temperature in the Antarctic was −27 °C. What is the difference between these temperatures? (1)

_____

3 $(360 \div 12) + 20 = 50$
Write down the inverse calculation you would use to check whether or not this calculation is correct? _____ (2)

4 Robbie's school is 1.36 km from his home. He walks the journey to and from school for 5 days. How far does he walk altogether? _____ (2)

5 What is $6^3 \div 6^2$? _____ (3)

6 Show that 7 is a factor of 1575 _____ (1)

7 What is the lowest common multiple of 42 and 56? _____ (2)

8 What is $\frac{5}{12} + \frac{5}{9} + \frac{3}{4}$? _____ (5)

9 What is $\frac{14}{15} - (\frac{3}{5} + \frac{1}{4})$? _____ (5)

10 What is the value of x in $4^x = 256$? _____ (1)

11 $5(3x + 4) + 3(2x + 2) = 68$
What is the value of x? _____ (4)

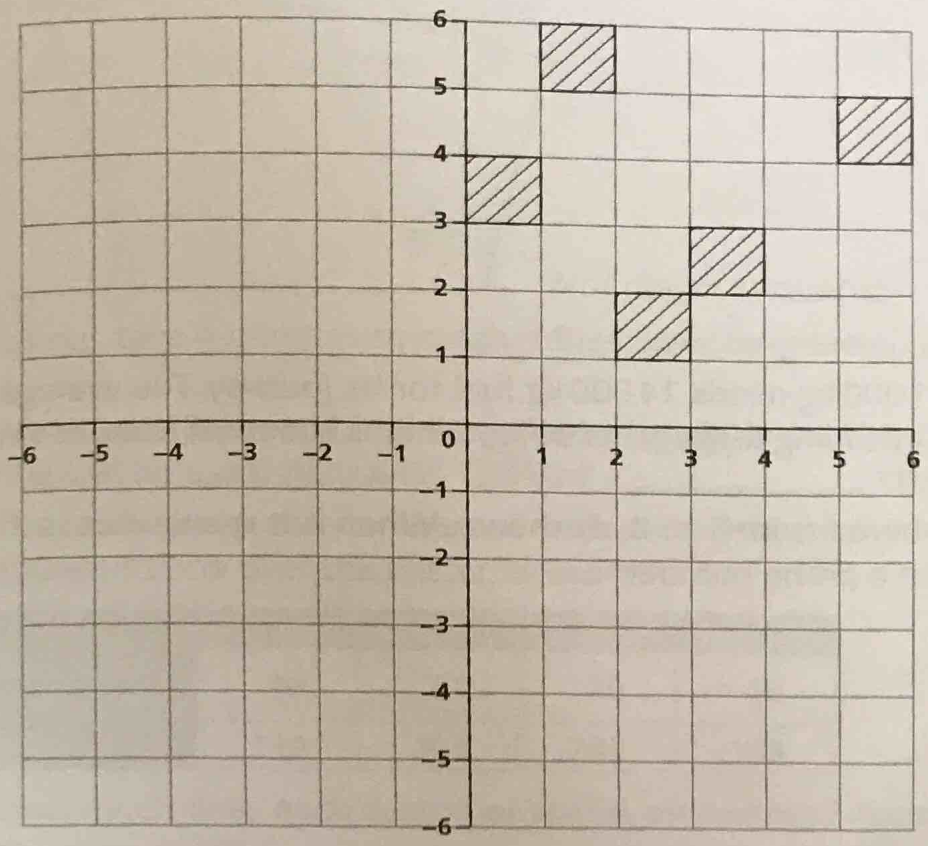
12 $7(2y - 2) - 3(4y - 3) = 13$
What is the value of y? _____ (4)

13 Clara walked 700 m and Marcus walked 0.84 km. Write the ratio of the distance Clara walked to the distance Marcus walked in its simplest form. _____ (2)

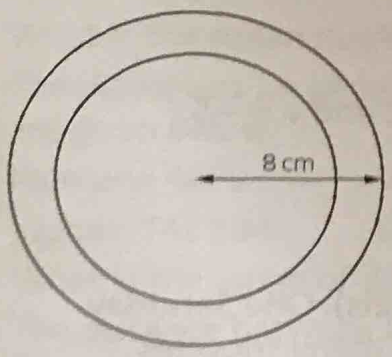
14 Last season Jones scored 24 goals, Smith scored 28 goals and McCloud scored 20 goals. Write the ratio of goals scored by Jones : Smith : McCloud in its simplest form? (2)

_____

15 Reflect this pattern in the x-axis and then in the y-axis so that it appears in all four quadrants. (3)



16 A circular plate has a radius of 8 cm, as shown. What is the circumference of the plate? Remember, the circumference of a circle is 3.14 × diameter. _____ (2)



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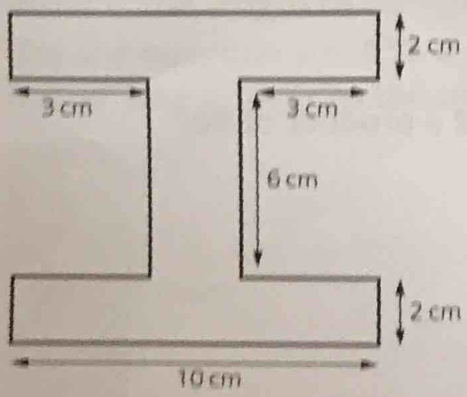
17 Donna has bought 24 cans of cola, each containing 330 ml. How many litres of cola is this? _____ (2)

18 What is the area of the 'I' shape? _____ (4)



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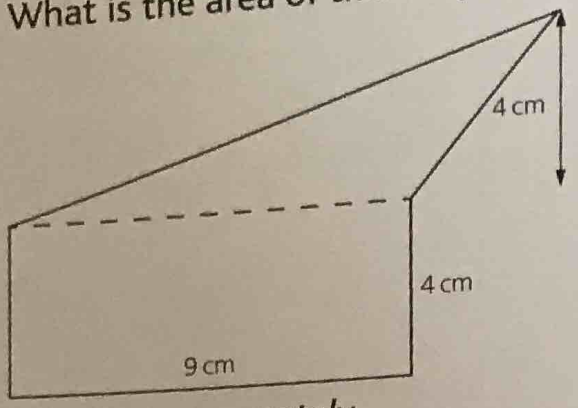
19 What is the area of this shape? _____ (3)



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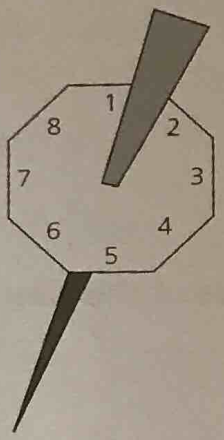
20 An aircraft with a mass of 41 000 kg needs 14 800 kg fuel for its journey. The average mass of its 140 passengers (including luggage) is 90 kg. What is the total mass of the plane as it is about to take off? _____ (2)

21 An octagonal spinner is numbered from 1 to 8, as shown. When it is spun, what is the probability that it will land on a prime number? _____ (2)



22 Work out the value of the expression below when $a = 4$, $b = 2$ and $y = -5$. (5)

$\sqrt{a^2 + b^3 + y^2}$ _____

23 Simplify the expression below. _____ (1)

$g \times g \times g \times h \times h \times h$

24 A cycle hire shop has bicycles (2 wheels) and tricycles (3 wheels). One Saturday morning it hires out 22 cycles with a total of 52 wheels. How many tricycles were hired? _____ (5)

25 Dusty, the hamster, eats $\frac{2}{3}$ of a bowl of hamster oats every day. How many days will it take Dusty to eat 12 bowls of hamster oats? _____ (2)

26 Henrietta receives £80 for Christmas. She buys a pair of boots costing £39.99 and a bag costing £17.49

How much money does she have left? _____ (2)

27 Which three of the numbers below have a sum of 16 and a product of 96? (2)

_____

2 3 4 5 6 7 8 9

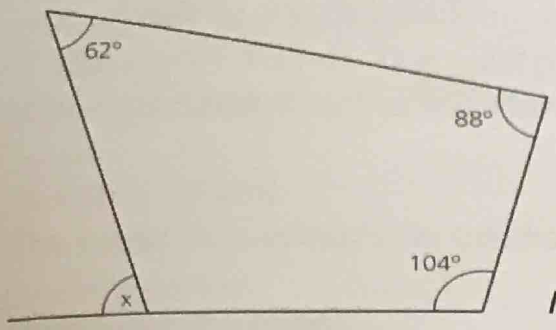
28 Complete this number sentence. (3)

$40 \div 8 + 4 = (107 + \_\_\_\_\_) \div 12$

29 Write the next number in this sequence? (1)

3 8 18 38 _____

30 What is the value of angle x? _____ (3)



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31 4 frogs take 4 minutes to catch 4 flies. How long would it take 1 frog to catch 1 fly?

_____ (1)

32 Amari uses 3 litres of fuel when he travels 80 km on his motorbike. How much fuel will he use if he travels 120 km? _____ (2)

33 The table shows the numbers of customers and value of sales at the Sunshine Souvenir Shop over the Easter weekend.

	Friday	Saturday	Sunday	Monday
Number of customers	16	21	20	18
Sales (£)	113	203	285	158

How much does each customer spend, on average? Round your answer to the nearest 10p? _____ (4)

34 The list below shows the number of children in each class at a secondary school.

28 27 25 28 29 24 33 29 30 32 26 25

What is the mean number of children in each class? _____ (2)

35 The diameters (in kilometres) of the eight main planets in our solar system are given below.

Mercury: 4879 Venus: 12 104 Earth: 12 756 Mars: 6792

Jupiter: 142 984 Saturn: 120 536 Uranus: 51 118 Neptune: 49 528

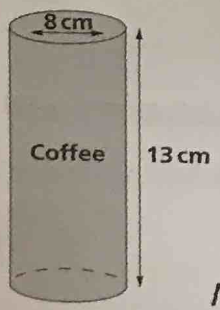
What is the range of diameters? _____ (3)

36 The distance between Moscow and Vladivostok on the Trans-Siberian Railway is 9300 km. The distance between Moscow and Taishet along the same route is 4500 km. Write the ratio of the distance from Moscow to Taishet : Moscow to Vladivostok in its simplest form _____ (3)

37 A triangle has a perimeter of 78 cm. The lengths of its sides are in the ratio 3:4:5

What is the length of its longest side? _____ (3)

38 Use the equation $v = 3.14 \times r^2h$ to work out the volume (v) of the coffee jar shown. Round your answer to the nearest cm³. _____ (3)



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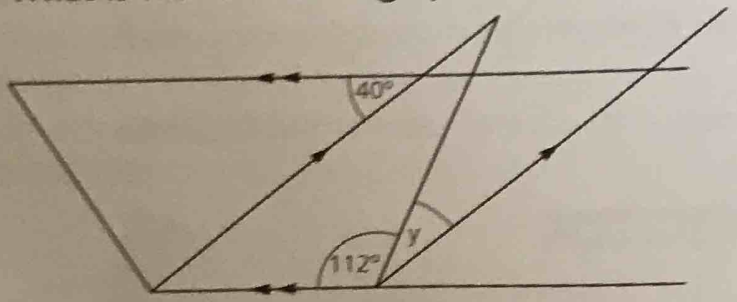
39 What is the missing digit in this number statement? _____ (1)

$1\_2 \times 15 = 2130$

40 Write the missing digit in this calculation. (2)

		8	4	4
		6	5	9
+		2	_	8
	1	8	0	1

41 What is the value of angle y? _____ (3)



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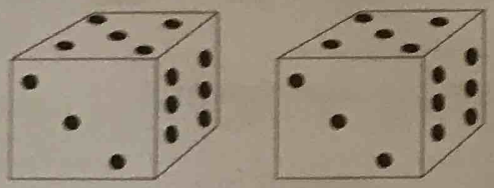
42 What is the value of v in the equation below? _____ (3)

$3(2v - 2) = 4(9 - 2v)$

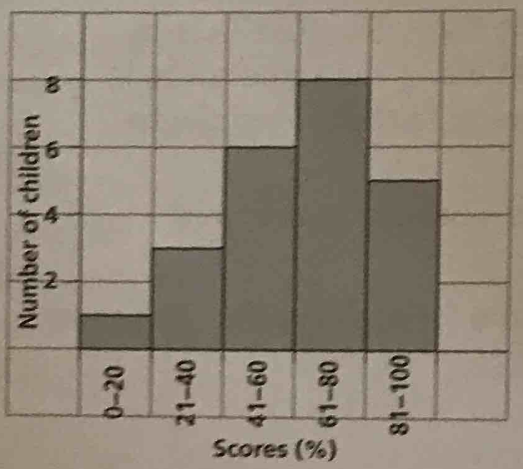
43 Dillon rolls two normal dice and adds the scores together.

What is the probability that his total score is 6? _____ (5)



44 The results of Class 6Y's spelling test are shown in the bar chart.

How many children scored 61% or more? _____ (2)



45 Andreas thinks of a number, divides it by 8, multiplies the result by 5, subtracts 6 and then divides this result by 2

His final number is 7

What was his original number? _____ (4)

46 Bjorn knows that he weighs 8 stone 7 pounds. How much is this in kilograms? Round your answer to the nearest kilogram. _____ (4)

(1 stone = 14 pounds, 1 kg = 2.2 pounds)

47 Simone is 5 feet 2 inches tall. How tall is this in metres and centimetres?

_____ (3)

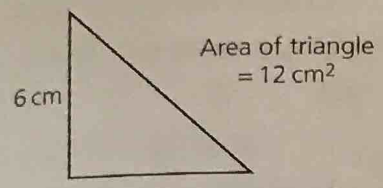
(1 inch = 2.5 cm)

48 The petrol tank in Yuri's car can hold 12 gallons of petrol. How many litres is this?

_____ (1)

(1 gallon = 4.5 litres)

49 This triangle has area 12 cm² and height 6 cm. How long is the base? _____ (3)



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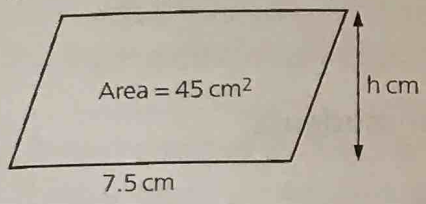
50 This parallelogram has an area of 45 cm². The base of the parallelogram is 7.5 cm. What is the height of the parallelogram? _____ (2)



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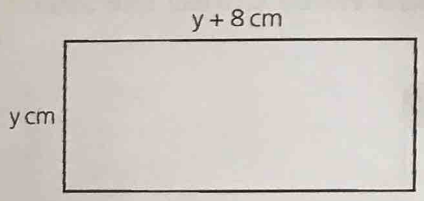
51 A marathon race begins at 09:45 and Andy takes 3 hours, 11 minutes and 24 seconds to complete the race. Write his exact finish time in 24-hour clock format. _____ (3)

52 Complete the function machine. (2)

4 → × 6 → ☐ → 17

53 Write an expression that represents the area of the rectangle. _____ (1)



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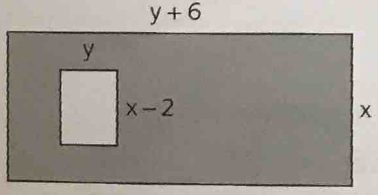
54 Write an expression for the shaded area? _____ (3)



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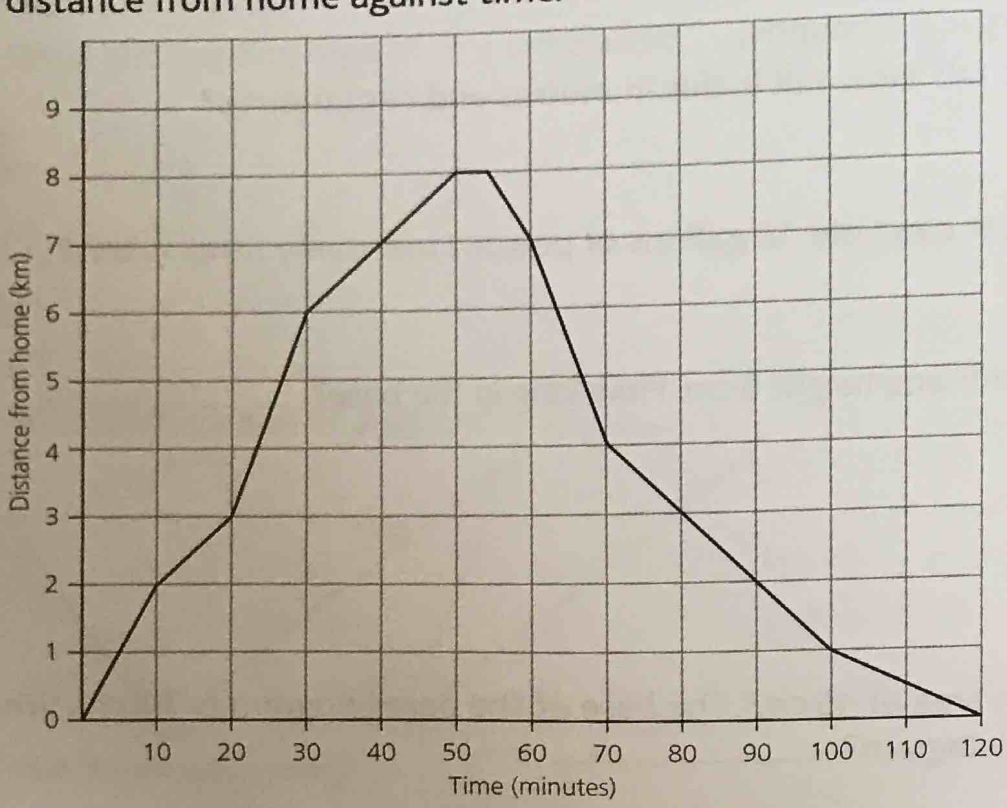
55 Simplify the expression. _____ (2)

$$\frac{6r^2 - 9r}{3r}$$

56 Charlie goes out for a run that starts and finishes at his house. The graph shows his distance from home against time.



How far did Charlie run? _____ (2)

57 The two-way table shows the subjects studied by a group of students.
Complete the table. (5)

	History	Geography	Languages	Total
Boys		42	34	105
Girls				
Total	76		82	206

58 The table shows the favourite milkshake flavours of a group of children. Amber wants to draw a pie chart to show the data but can't remember how to work out the sizes of the angles. Work out the size of the angle for each flavour and write it into the space provided in the table. (5)

Ice-cream flavour	Number of children	Angle size
Vanilla	12	
Strawberry	14	
Chocolate	16	
Cherry	2	
Banana	4	

59 The list below shows the heights (in centimetres) of plants at a garden centre.

21	23	20	39	56	65	48	52	58	36	49
38	45	56	63	50	30	33	58	24	40	62
26	36	46	59	20	42	68	26			

Complete the table using this data. (5)

Plant height (cm)	Tally	Frequency
20–29		
30–39		
40–49		
50–59		
60–69		

60 Jess is taking part in a charity race and wants her outfit to stand out. She has a choice of a pink, purple or yellow vest and a pair of pink, purple or yellow shorts. She decides to pick a vest and a pair shorts at random. What is the probability she will pick a pink vest and pink shorts? _____ (5)

61 Write the next number in this sequence? (1)

1 2 5 14 41 _____

62 $y = x^2 - 3x + 5$

What is the value of y when $x = 5$? _____ (4)

63 $6f - 6 = 4(f + 1)$

What is the value of f? _____ (4)

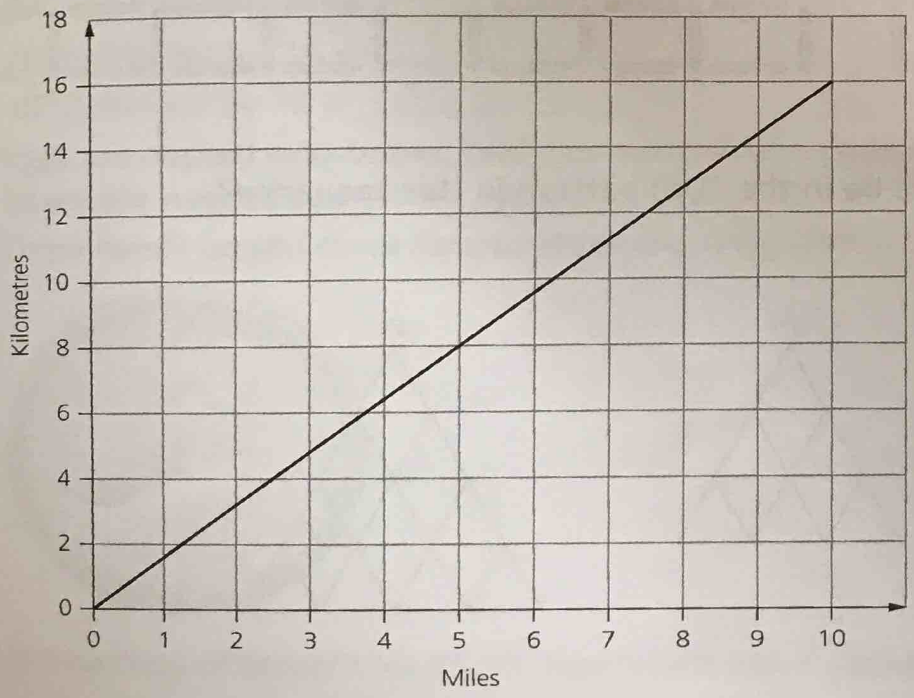
64 The cost of staying at the Relaxing Sleep Hotel is £45 for the first night and £30 for each additional night (n). Write an expression to show the total cost (t).

_____ (1)

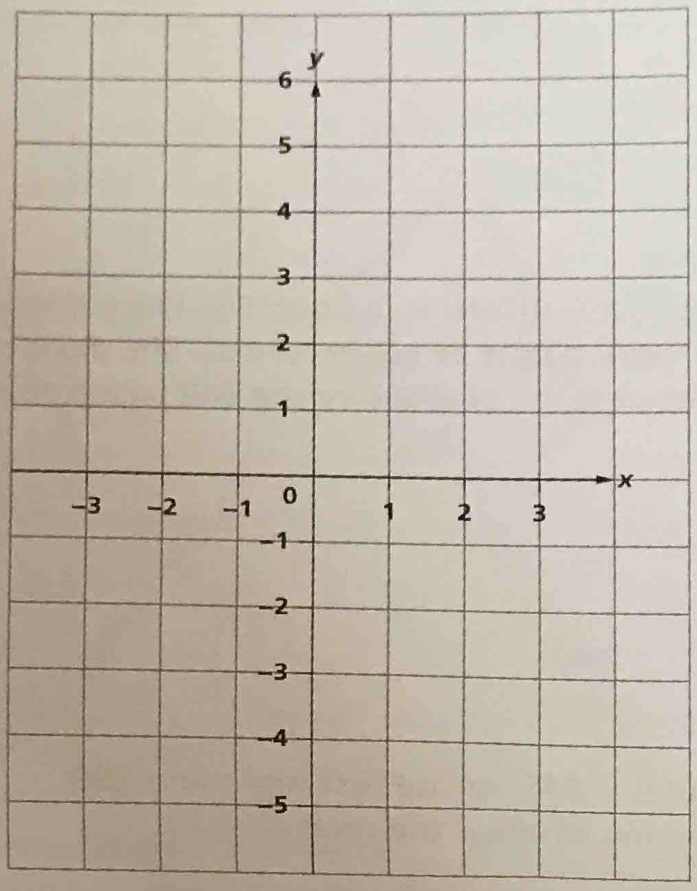
65 AB taxi company charges a fixed fee of £3.20 and an additional fee of 35p per mile. Thierry takes an AB taxi from the hotel to the airport and pays £9.50

How many miles is it from the hotel to the airport? _____ (2)

66 The graph shows the relationship between miles and kilometres. What is 6 miles to the nearest kilometre? _____ (1)



67 On the axes, draw the graph of $y = 5 - x^2$ for values of x from -3 to 3 (5)

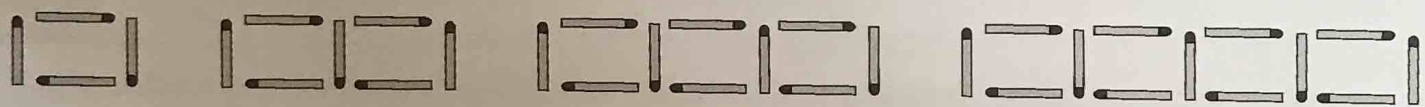


68 Find the nth term for the sequence below. (4)

1st	2nd	3rd	4th	5th	...	nth
5	13	21	29	37	...	_____

69 What is the nth term for this pattern? _____ (4)

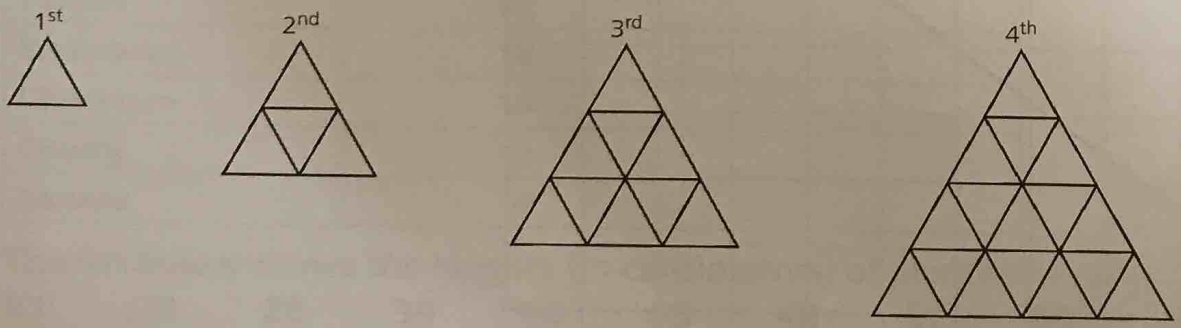
Pattern



Term 1 2 3 4

70 How many triangles will there be in the 10th pattern in this sequence?

_____ (2)



Record your results and move on to the next paper

Score ☐ / 192 Time ☐ : ☐