Name: _____

Maths Genie Stage 7

Test B

Instructions

- Use **black** ink or ball-point pen.
- Answer all questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**
- **Calculators may be used.**

Information

- The marks for each question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end

1 The table shows information about the number of goals a team scored in 38 games.

Points	Frequency
0	8
1	16
2	9
3	5
4 or more	0

(a) Find the median number of goals scored.

1

.....

(1)

(b) Write down the mode

1

.....

(1)

(c) Work out the total number of goals the team scored in all 38 games.

$0 \times 8 = 0$

$1 \times 16 = 16$

$2 \times 9 = 18$

$3 \times 5 = 15$

1 for points x frequency

$16 + 18 + 15 = 49$

49

.....

(2)

(Total for Question 1 is 4 marks)

2 A biased spinner can land on 1, 2, 3 or 4.
The table shows the probabilities that the spinner will land on 2 and 4.

Number	1	2	3	4
Probability	0.32	0.34	0.16	0.18
	2x		x	

The probability that the spinner will land on 1 is **twice** the probability that the spinner will land on 3.

(a) Complete the table. $0.34 + 0.18 = 0.52$

$1 - 0.52 = 0.48$

$3x = 0.48$

$x = 0.16$

$2 \times 0.16 = 0.32$

(2)

1 for 0.16

Johnny is going to spin the spinner 200 times.

(b) Work out an estimate for the number of times the spinner will land on 2.

$0.34 \times 200 = 68$

1 for 0.34x200

68

(2)

(Total for Question 2 is 4 marks)

---

3 Solve $3(2x + 1) > 27$

$6x + 3 > 27$

$-3 \quad -3$

$6x > 24$

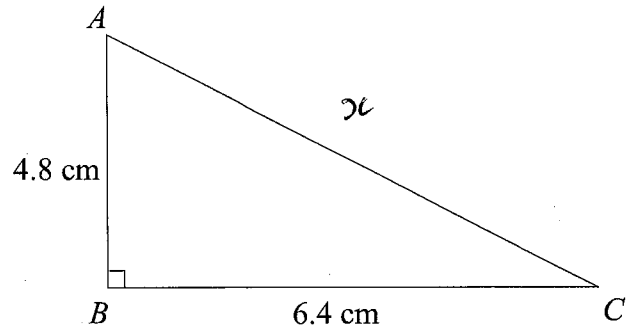
$x > 4$

1 for 4

$x > 4$

(Total for Question 3 is 2 marks)

4



Calculate the length of AC.

$4.8^2 + 6.4^2 = x^2$ 1 for correct substitution

$64 = x^2$ 1 for 64

$x = \sqrt{64}$

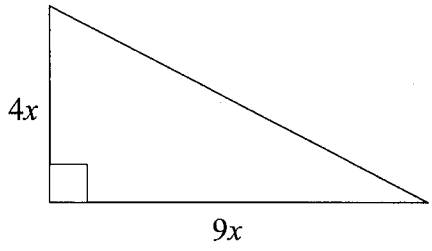
$= 8$

8 .....cm

(Total for Question 4 is 3 marks)

---

5 The diagram shows a right angled triangle.



The area of the triangle is 252 cm^2

Work out the value of x.

$\frac{1}{2} \times 4x \times 9x = 252$

1 for correct area formula $18x^2 = 252$

1 for $x^2 = 14$ $x^2 = 14$

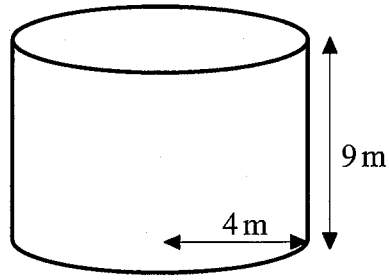
$x = 3.74$ cm

$x = 3.74$ cm

(Total for Question 5 is 3 marks)

6 A solid cylinder has a radius of 4 m and a height of 9 m.

Work out the total surface area of the cylinder.
Give your answer in terms of π.



Total surface area $= 2\pi r^2 + 2\pi rh$

$= 2\pi(4)^2 + 2\pi(4)(9)$

$= 104\pi \text{ m}^2$

1 for correct area of circle = 50.265 or $\pi(4)^2$

AND correct area of rectangle = 226.19 or $2\pi(4)(9)$

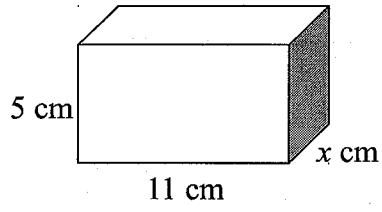
1 for m^2

$104\pi \text{ m}^2$

(Total for Question 6 is 3 marks)

---

7 The diagram shows a cuboid.



The volume of the cuboid is 330 cm^3

1 for correct formula

Calculate the value of x

$5 \times 11 \times x = 330$

$55x = 330$

$x = 6$

6

(Total for Question 7 is 2 marks)

8 Here are the first 5 terms of a sequence.

4 11 18 25 32

Find an expression, in terms of n, for the nth term of this sequence.

7n 7 14 21 28 35

1 for 7n

$7n - 3$

(Total for Question 8 is 2 marks)

---

9 Fearne invests £4500 in a savings account.
She gets 2.5% per annum compound interest.

After n years, Fearne has £5482.81 in her account.
Work out the value of n.

1 for any correct formula

$4500 \times 1.025^n = 5482.81$

~~$1.025^n = 1.2184...$~~

$4500 \times 1.025^5 = 5091.34$

$4500 \times 1.025^6 = 5218.62$

$4500 \times 1.025^7 = 5349.09$

$4500 \times 1.025^8 = 5482.81$ ✓

8

(Total for Question 9 is 2 marks)