Mock Grade 7

Maths Booklet 5

Paper 2H
Calculator

www.ggmaths.co.uk

1 A pendulum of length L cm has time period T seconds.
T is directly proportional to the square root of L.

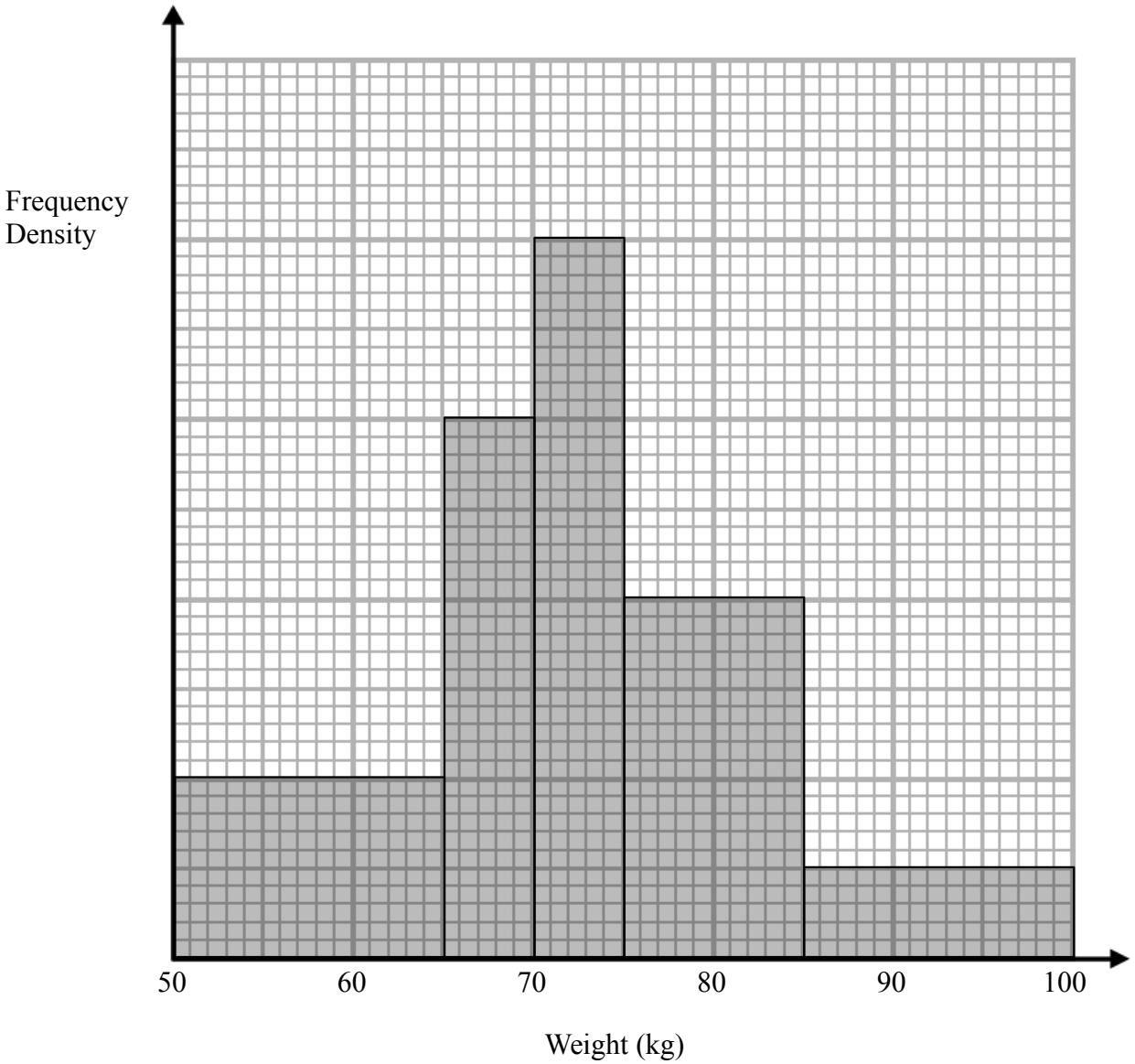
The length of the pendulum is decreased by 25%.

Work out the percentage decrease in the time period.

.....

(Total for Question 1 is 3 marks)

2 The histogram shows information about the weight of pigs.



30 pigs weigh between 50 and 65 kg.

(a) Work out an estimate for the number of pigs which weigh more than 80kg.

…..

(3)

(b) Explain why your answer to part a is only an estimate.

…..

…..

(1)

(Total for question 2 is 4 marks)

3 d is inversely proportional to c^2

When $c = 8$, $d = 15$

Find the value of d when $c = 40$

$d =$ .....

(Total for Question 3 is 3 marks)

---

4 Prove algebraically that

$(3n + 1)^2 + (3n + 1)$ is a multiple of 3

for all positive integer values of n.

(Total for Question 4 is 3 marks)

---

5 Write $0.2\dot{7}$ as a fraction in its simplest form.

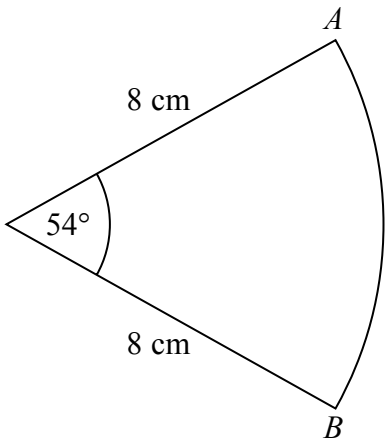
(Total for Question 5 is 2 marks)

6 Show that $\frac{1}{6x^2 - 7x - 20} \div \frac{1}{9x^2 - 16}$ simplifies to $\frac{ax + b}{cx + d}$ where a, b, c and d are integers.

.....

(Total for Question 6 is 3 marks)

7 The diagram shows a sector of a circle of radius 8 cm.

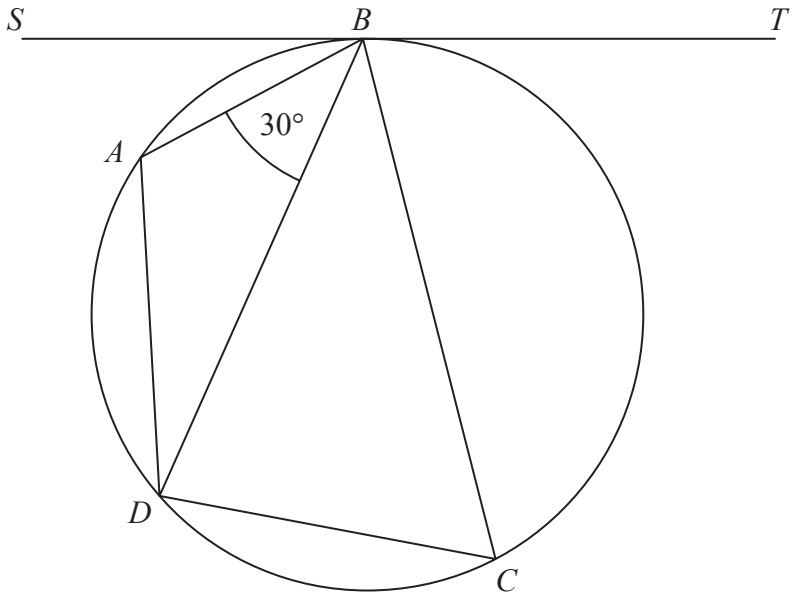


Work out the length of arc *AB*.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 7 is 2 marks)

8



A, *B*, *C* and *D* are four points on a circle.
SBT is a tangent to the circle.
Angle *ABD* = 30°

the size of angle *BAD* : the size of angle *BCD* = 7 : 5

Find the size of angle *SBA*.
Give a reason for each stage of your working.

.....°

(Total for Question 8 is 4 marks)