Weekly check: Grade 7

Grade 7 | Higher | 20 questions, 50 marks

GCSE Maths weekly check

Scan for the solutions

Name: _____ **Date:** _____ **Score:** _____ **/ 50**

1 In triangle ABC, AB = 3 cm, AC = 5 cm and BC = √19 cm.
Find the size of angle BAC.

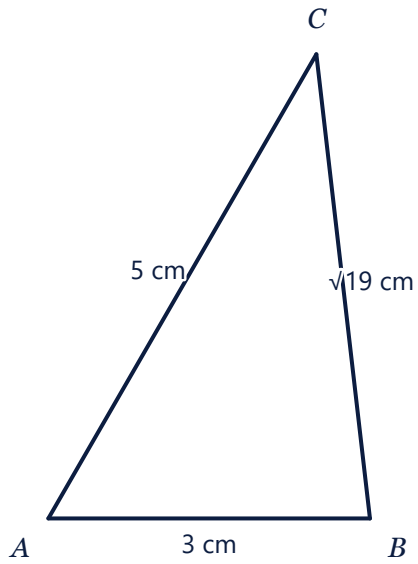

Diagram NOT accurately drawn

(4 marks)

Answer _____

2 Show that √12 + √27 can be written as 5√3.

(2 marks)

Answer _____

3 ABCD is a parallelogram. AB = 12 cm, AD = 7.5 cm and angle DAB = 65°.
Calculate the area of the parallelogram. Give your answer correct to 3 significant figures.

(2 marks)

Answer _____

4 A and B are two events.

$P(A) = 0.5$, $P(B) = 0.4$ and $P(A \cup B) = 0.7$

a. Work out $P(A \cap B)$.

b. Work out $P(B \mid A)$.

(4 marks)

Answer _____

5 A, B and C are points on a circle with centre O.

B lies on the major arc AC.

Angle AOC = 128°.

Work out the size of angle ABC. Give a reason for your answer.

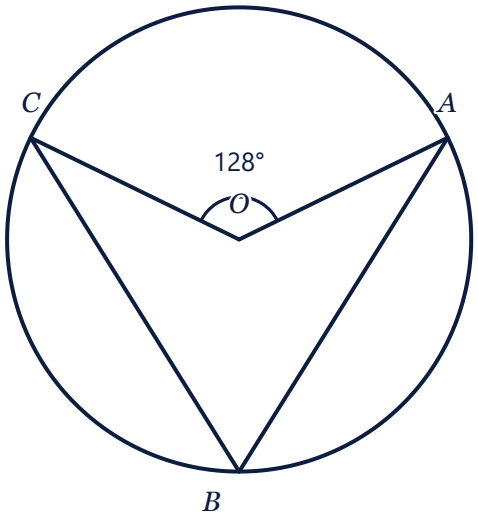

Diagram NOT accurately drawn

(3 marks)

Answer _____

6 The line $y = ax + 5$ is perpendicular to the line $by = 3x - 2$.

Find b in terms of a.

(3 marks)

Answer _____

7 Work out the value of $(\frac{36}{25})^{\frac{1}{2}}$

(2 marks)

Answer _____

8 Write $x^2 + 8x + 3$ in the form $(x + a)^2 + b$, where a and b are integers.

(2 marks)

Answer _____

9 Two mathematically similar candles, C and D, are made from the same wax.

C has surface area 36 cm^2 and D has surface area 81 cm^2.

The volume of C is 24 cm^3.

Work out the volume of D.

(3 marks)

Answer _____

10 The frequency densities for the times, t minutes, that 80 customers waited in a post office queue are shown in the table.

Time (t minutes)	**Frequency density**
$0 < t \leq 10$	2
$10 < t \leq 30$	1.5
$30 < t \leq 40$	3

Mia says, "The $0 < t \leq 10$ class must have the most customers because its bar is tall." Is Mia correct? You must show your working.

(2 marks)

Answer _____

11 Factorise $2x^2 + 7x + 3$

(2 marks)

Answer _____

12 In triangle ABC, angle BAC = 52°, angle ACB = 63° and AC = 11 cm.

Calculate the length of BC. Give your answer correct to 3 significant figures.

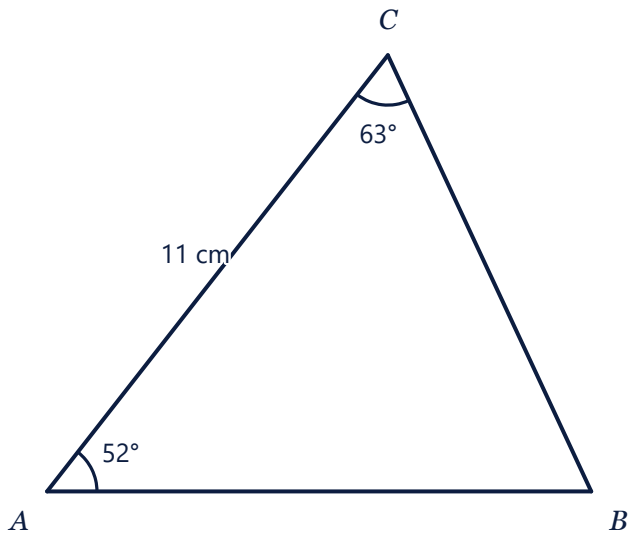

Diagram NOT accurately drawn

(3 marks)

Answer _____

13 p is inversely proportional to q.

When $q = 5$, $p = 12$.

a. Find a formula for p in terms of q.

b. Find the value of p when $q = 8$.

(3 marks)

Answer _____

14 A park keeper wants to estimate the number of fish in a lake.

She catches 30 fish, tags them and puts them back in the lake.

The next day she catches 40 fish. 8 of these fish are tagged.

Work out an estimate for the number of fish in the lake.

(2 marks)

Answer _____

15 $f(x) = 3x - 4 \quad g(x) = x^2$

a. Find $f(5)$

b. Find $gf(2)$

(3 marks)

Answer _____

16 Here are four equations.

A: $y = 3 \times 1.2^x$ B: $y = 5 \times 0.8^x$ C: $y = 0.5 \times 4^x$ D: $y = 2 \times (⅓)^x$

Which of the graphs show exponential decay (the curve goes down as x increases)? Give a reason.

(2 marks)

Answer _____

17 A histogram shows the heights of 71 trees. The table gives the frequency density for each class.

Height (h m)	**Frequency density**
$0 < h \leq 10$	1.2
$10 < h \leq 20$	2.5
$20 < h \leq 40$	1.5
$40 < h \leq 50$	0.4

Work out the frequency for each class and check that the total is 71.

(2 marks)

Answer _____

18 Here are the first five terms of a quadratic sequence.

2 7 14 23 34

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

(2 marks)

Answer _____

19 Prove algebraically that the sum of an odd number and an even number is always odd.

(2 marks)

Answer _____

20 Simplify fully $\frac{2x^2 + 6x}{4x}$

(2 marks)

Answer _____

End of questions | Total 50 marks