St. Patrick's High School, Keady

Mathematics Department

GCSE Mathematics Practice Booklet

M2

Topic 8 – Geometry and Measure 3

Working with measures

Drawings

Compound Measures and Units

Questions taken from CCEA Past Papers

Mark Scheme included at the end of this booklet

Keady Maths

Q1 A lorry travels 240 km in 150 minutes.

Calculate the average speed of the lorry in km/hr.

Answer _____ km/hr [3]

Q2 A coach travels 140 miles in 2 hours 30 minutes.

Calculate the average speed.

Answer _____ mph [3]

Q3 In one section of the Circuit of Ireland rally the winning car travelled a distance of 297 miles in $4\frac{1}{2}$ hours.

Calculate the winning car's average speed for this section of the rally.

Answer _____ mph [3]

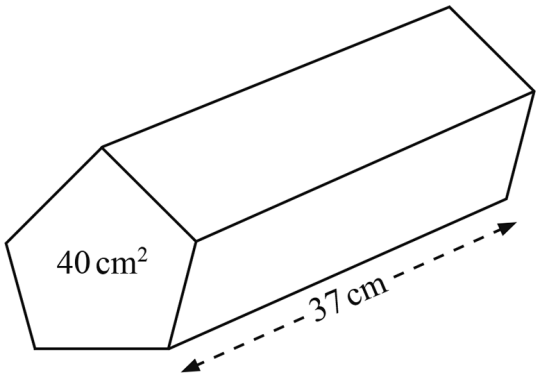
Q4 A train journey from Belfast to Dublin takes 2 hours and 15 minutes.

The distance travelled by the train is 144 kilometres.

Work out the average speed of the train in kilometres per hour.

Answer _____ km/h [2]

Q5 A solid pentagonal prism has mass 5300 g. The cross-sectional area is 40 cm^2 and the length is 37 cm.



Calculate the density of the prism in g/cm^3.

Give your answer to an appropriate degree of accuracy.

Answer _____ g/cm^3 [4]

Q6 Leah wants to check how economical her car is.

She travels 275 miles, using 22 litres of petrol.

(a) How many miles does her car travel per litre of petrol?

Answer _____ miles [1]

(b) The 275 mile journey took Leah 5 hours 30 minutes.

What was her average speed for the journey?

Answer _____ miles per hour [3]

Q7 Jane completes a 5 km race in 24 minutes.

Calculate her average speed in km/hr.

Answer _____ km/hr [2]

Q8 A cuboid has length 90 cm, width 45 cm and height 30 cm.

It has a mass of 24 300 g.

Calculate the density of the cuboid.

Include units in your answer.

Answer _____ [4]

Q9

The table shows part of a train timetable from Edinburgh to St Andrews.

The Express trains travel directly. The Standard trains stop at other stations.

	Express	**Standard**	**Express**	**Standard**	**Express**
Edinburgh	1318	1343	1424	1441	1520
Haymarket		1406		1504	
Kirkcaldy		1418		1516	
Ladybank		1423		1521	
St Andrews	1403	1439	1509	1537	1605

(a) Alex arrives at Edinburgh Airport at 1306

It takes him 26 minutes to collect his luggage.

By taxi, he arrives at Edinburgh Train Station 18 minutes later.

How long will he have to wait at the station for the next train to St Andrews?

Answer _____ minutes [3]

(b) The distance between Edinburgh and St Andrews is 54 miles.

Calculate the average speed at which the Express train travels between Edinburgh and St Andrews.

Answer _____ miles/hr [3]

Q10

(b) A horse runs 2000 metres at an average speed of 14.5 m/s.

How long does this take?

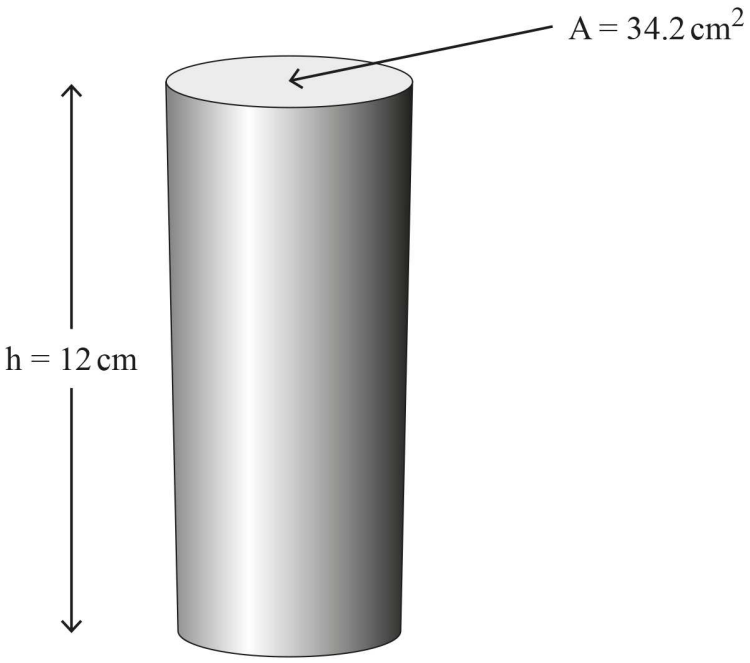
Give your answer in minutes and seconds, to the nearest second.

Answer _____ minutes _____ seconds [3]

Q11 A solid cylinder has a height of 12 cm and a circular cross-sectional area of $34.2\,cm^2$

The density is $0.83\,g/cm^3$

Find the mass of the cylinder.



Answer _____ g [3]

Q12 A lorry needs to be driven 156 miles to a ferry port.

It needs to arrive at 4pm.

The lorry is driven at an average speed of 48 mph.

What is the latest time the journey should start?

Answer _____ [3]

1. 150 (mins) = $2\frac{1}{2}$ (hours) A1

$240 \div 2\frac{1}{2} = 240 \times \frac{2}{5}$ M1

= 96 km/hr A1

alternatively

240 km = 150 mins (÷5) MA1
48 km = 30 mins (× 2) MA1
96 km = 60 mins (96 km/hr) A1

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2. $2\frac{1}{2}$ hrs A1

$140 \div 2\frac{1}{2} = 56$ M1 A1

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3. 297 ÷ 9 **or** 297 ÷ 4.5 **or** 297 ÷ 270 M1
33 miles in $\frac{1}{2}$ hour **or** 594 ÷ 9 **or** 1.1 × 60 A1
66 A1

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4. 144 ÷ 2.25 (o.e.) M1
64 A1

5.

$40 \times 37 = 1480$	MA1
$5300 \div 1480 = 3.58(108)$	M1 A1
3.6 or 4	MA1

6.

(a)	$275 \div 22 = 12.5$	A1
(b)	$275 \div 5.5$	M1 A1
	50	A1

7.

speed $= \frac{5}{\left(\frac{24}{60}\right)}$ or $5 \div 0.4$	MA1
$= 12.5$ km/hr	A1

alternative solution

5 km = 24 minutes ($\div 4$)	
1.25 km = 6 mins ($\times 10$)	MA1
12.5 km = 60 mins = 1 hour	A1

8.

$V = 90 \times 45 \times 30 = 121500$ MA1

$D = \frac{24300}{121500}$ MA1

$= 0.2\ g/cm^3$ (units mark) A1A1

9.

(a) 1306 + 26 minutes + 18 minutes M1

= 1350 A1

Has to wait 34 minutes A1

(b) 1424 – 1509 = 45 mins ($\frac{3}{4}$ hr) MA1

Speed = $\frac{54}{\frac{3}{4}}$ **or** 54 miles in 45 minutes

18 miles in 15 mins [or 1.2 miles in 1 min] MA1

= 72 A1

10.

(b) 2000 ÷ 14.5 MA1

137.9310..... A1

2 minutes 18 seconds A1

11.

$34.2 \times 12 = 410.4$	MA1
0.83×410.4	MA1
$= 340.632$	A1

12.

$156 \div 48$	MA1
3.25	A1
12.45 (pm)	A1
