

High School

Mathematics Test 2015

Year 7

Metric System

Non Calculator
Section

Skills and Knowledge Assessed:

- Connect decimal representations to the metric system (ACMMG135)
- Convert between common metric units of length, mass and capacity (ACMMG136)
- Solve problems involving the comparison of lengths and areas using appropriate units (ACMMG137)
- Connect volume and capacity and their units of measurement (ACMMG138)
- Solve problems involving duration, including using 12-and 24-hour time within a single time zone (ACMMG139)
- Interpret and use timetables (ACMMG139)

Answer all questions in the spaces provided on this test paper by:

Writing the answer in the box provided.

or

Shading in the bubble for the correct answer from the four choices provided.

Show any working out on the test paper. Calculators are **not** allowed.

1. George has a set of dumbbells which weigh 6 kg.

How many grams is this?



2. Which of the following is the same length as 14 metres?

- 140 cm 1 400 cm 140 mm 1 400 mm

3. Which would be a reasonable estimate for the mass of an average family car?

- 15 kg 150 kg
 1.5 tonnes 15 tonnes



4. Hannah misses her train by 3 minutes.

This is the same as :

- 90 seconds 120 seconds
 150 seconds 180 seconds

5. Use a ruler to measure the length (longest side) of the shaded rectangle below, to the nearest mm.



6. Mira buys a bulk container of drinking water which holds 15 litres.
How many millilitres of water is this?

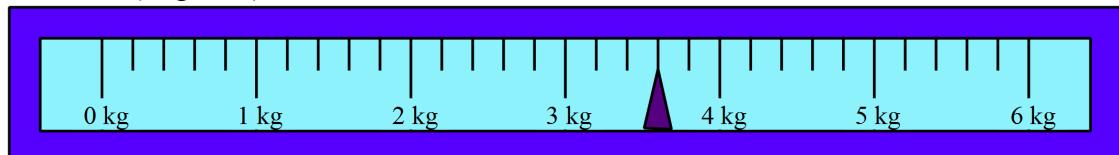
7. A netball match starts at 2:50pm and lasts for 55 minutes.
What time does it finish?

 : pm

8. Will drives from Brisbane to Perth along the most direct route he can find.
What is a good estimate of the distance he travels?

400 km 4 000 km 40 000 km 400 000 km

9. What mass (in grams) is shown on the scale below?



10. The mass of a stone jar is 4.5 kg. Georgia pours water into the jar which weighs 1800 grams.
What is the combined mass of the jar and the water (to the nearest 10th of a kg)?

Questions 11 – 13 refer to the train timetable below.

Perth Station	5:23 am	6:27 am	6:54 am	7:08 am
City West	5:25 am	6:29 am	6:56 am	7:10 am
West Leederville	5:27 am	6:31 am	6:58 am	7:12 am
Subiaco	5:29 am	6:33 am	7:00 am	7:14 am
Daglish	5:30 am	6:34 am	7:01 am	7:15 am
Shenton Park	5:32 am	6:36 am	7:03 am	7:17 am
Karrakatta	5:34 am	6:38 am	7:05 am	7:19 am
Loch Street	5:35 am	6:39 am	7:06 am	7:20 am
Claremont	5:37 am	6:41 am	7:08 am	7:22 am
Swanbourne	5:39 am	6:43 am	7:10 am	
Grant Street	5:40 am	6:44 am	7:11 am	
Cottesloe	5:42 am	6:46 am	7:13 am	
Mosman Park	5:44 am	6:48 am	7:15 am	
Victoria Street	5:45 am	6:49 am	7:16 am	
North Fremantle	5:47 am	6:51 am	7:18 am	
Fremantle	5:51 am	6:55 am	7:22 am	7:31 am

11. How long does it take to get from Subiaco to Fremantle on the train which leaves at 6:33?

22 minutes 28 minutes 32 minutes 41 minutes

12. Jean gets off her train at Claremont at 7:08.

How many minutes earlier did she catch her train at Perth Station?

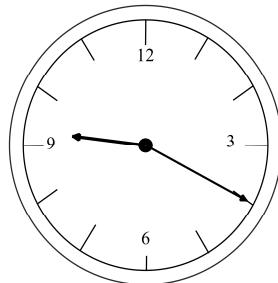
13. Ivy was 12 minutes too late to catch the 5:40 train from Grant St.

How many more minutes must she wait for the next train to arrive to take her to Freemantle?

14. Harry checks his phone for the time as he leaves a concert at school.
When he gets home he checks the clock on the wall.
If both show the correct time, long did it take him to get from school to home?



Harry's Phone at school



Clock when he gets home.

- 50 minutes
 An hour and 5 minutes

- 55 minutes
 An hour and 10 minutes

15. The floor of a meeting room can hold a maximum of 3 tonnes.
How many people who have an average mass of 50 kg could the floor hold?

- 30 people
 50 people
 60 people
 150 people



16. A water storage dam on a property has a capacity of 6 megalitres.
On average 120 kilolitres is used each day.
If there is no water added to the dam, how many days will the water stored in the dam last?



17.

Su Lyn uses 120 g of flour and 20 ml of milk to make one chocolate cake.

She wants to make a lot of cakes for the school market day, but only has 2 litres of milk.

How much flour will she need to make all of the cakes that she can?

 2 kg 4 kg 6 kg 12 kg

18.

Leo pours cups of water at the school market day from a container which holds 12 litres.

Each cup holds 300 ml of water.

Each empty cup weighs 50 g and each litre of water weighs 1 kg.

He has exactly enough cups to take all the water.

What is the total mass of all of the cups of water when they are full?



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Short Answer
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Name _____

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Shading in the bubble for the correct answer from the four choices provided.

Show any working out on this test paper. Calculators are allowed.

1.	Which measurement is the same as 6 500 ml?			
	<input type="checkbox"/> 0.65 litres	<input type="checkbox"/> 6.5 litres	<input type="checkbox"/> 65 litres	<input type="checkbox"/> 0.65 kilolitres
2.	Which unit would not be appropriate to give the measure of your height?			
	<input type="checkbox"/> millimetres	<input type="checkbox"/> centimetres	<input type="checkbox"/> metres	<input type="checkbox"/> kilometres
3.	Which measurement could describe the capacity of a measuring cup used in cooking?			
	<input type="checkbox"/> 2.5 ml	<input type="checkbox"/> 25 ml	<input type="checkbox"/> 250 ml	<input type="checkbox"/> 2 500 ml
4.	What is 260 minutes in hours and minutes?			
	<input type="text"/>	hours and	<input type="text"/>	minutes.



5. A TV channel gives the time as 16:45.
Which description is correct for this time?
- A quarter to four in the morning.
 A quarter to five in the morning.
 A quarter to four in the afternoon.
 A quarter to five in the afternoon.

6. Yasmin lays a row of 50 square pavers.
Each paver measures 40 cm on each side.
What is the total length of the row, in metres?

7. In January, Sally recorded the mass of her new puppy as being 900g.
By November it had increased to 8.4 kg.
What was the increase in the puppy's mass (in kg)?



8. Tilly walks along a straight stretch of road, counting her steps. She counts 3 500 steps.
She has previously worked out that the length of her step was 80 cm.
Calculate the length of the stretch of road in kilometres?



9. Mikey stacks bricks which have a mass of 1.5 kg onto a pallet which will hold 800 bricks.

The pallet itself weighs 50 kg.

What is the weight of the full pallet of bricks?



- 1.25 tonnes 1.5 tonnes 12.5 tonnes 15 tonnes

10. When mixing fuel James empties 4 containers which each hold 8 litres of fuel into a tank, along with 8 containers of an additive which each hold 250 ml.

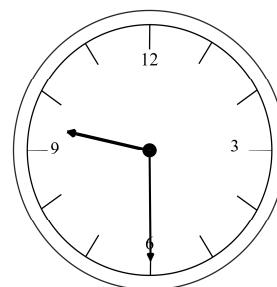
How many litres of the mixture are in the tank?

11. Liza went to bed at the time shown on the clock on her wall.

She slept for $8\frac{1}{2}$ hours.

She then took an hour and 20 minutes to get ready for school and get to the bus stop.

What time did she reach the bus stop?



- 7:20 am.
 7:40 am.
 8:10 am.
 8:20 am.

Questions 12 – 13 refer to the tram timetable shown below.

Stop	pm	pm	pm	pm	pm	pm	pm
Central Pier (Docklands)	7:03	7:56	8:35	9:17	10:18	11:18	11:58
Bourke St	7:05	7:58	8:37	9:19	10:20	11:20	12:00
Docklands Park	7:09	8:01	8:40	9:22	10:23	11:23	12:03
Spencer St	7:12	8:04	8:43	9:25	10:26	11:26	12:06
Melbourne Aquarium	7:13	8:05	8:44	9:26	10:27	11:27	12:07
Market St	7:15	8:07	8:46	9:28	10:29	11:29	12:09
Elizabeth St	7:16	8:08	8:47	9:29	10:30	11:30	12:10
Swanston St	7:17	8:09	8:48	9:30	10:31	11:31	12:11
Russell St	7:19	8:10	8:49	9:31	10:32	11:32	12:12
Spring St	7:21	8:12	8:51	9:33	10:34	11:34	12:14
Simpson St	7:24	8:15	8:54	9:36	10:37	11:37	12:17
Punt Rd	7:25	8:16	8:55	9:37	10:38	11:38	12:18
Yarra Bvd	7:32	8:23	9:02	9:44	10:45	11:44	12:24
Hawthorn Railway	7:35	8:26	9:05	9:47	10:48	11:47	12:27
Glenferrie Rd	7:39	8:30	9:09	9:51	10:52	11:51	12:31
Camberwell Tram Depot	7:43	8:34	9:13	9:55	10:56	11:55	12:35
Camberwell Junction	7:44	8:35	9:14	9:56	10:57	11:56	12:36
Toorak Rd	7:50	8:41	9:20	10:02	11:03	12:01	12:41
Warrigal Rd	7:53	8:44	9:23	10:05	11:06	12:04	12:44
Somers St	7:54	8:45	9:24	10:06	11:07	12:05	12:45
Middleborough Rd	8:00	8:51	9:30	10:12	11:13	12:11	12:51
Blackburn Rd	8:04	8:55	9:34	10:16	11:17	12:14	12:59
Stanley Rd	8:09	9:00	9:39	10:21	11:22	12:19	1:02
Hanover Rd	8:10	9:01	9:40	10:22	11:23	12:20	1:04

12. One tram leaves the Bourke St stop at 8:37 pm. How long does it take to get to the Toorak Rd stop?

13. Jack takes eight minutes to walk from the Middleborough Rd stop to his home. He needs to arrive at his home by 9:00 pm at the latest. What is the latest time he can catch a tram from Swanston St?

14. The volume of a tank is 8 cubic metres.
What is its capacity in litres?



15. Maggie celebrated her 17th birthday with a party on Saturday 22nd August 2015, although her actual birthday was on the Monday before that.

On what date was she born?

- 16/8/1998 17/8/1998 16/8/1999 17/8/1999

16. Karen loads 2 weights each of 12.5 kg onto a bar and lifts it.

Melody loads 4 weights each of 6500 g onto the same bar and lifts it.

Who lifts the most and by how much?

- Karen lifts 1 kg more than Melody.
 Karen lifts 2 kg more than Melody.
 Melody lifts 1 kg more than Karen.
 Melody lifts 2 kg more than Karen.



17. At 1:54 pm on Saturday, Vince left home to go to the football and arrived just as the game started.

It took him 56 minutes to get to the football.

The game lasted 105 minutes, including injury time.

What time did the game end?



18. A sheet of artist's paper has an area of 0.5 m^2 .
It is to be cut into pieces which have an area of 250 square centimetres.
Assuming there is no wastage, how many pieces could be cut from the sheet?

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ANSWERS		
No.	WORKING	ANSWER
1.	$6 \text{ kg} = 6 \times 1000 \text{ g} = 6000 \text{ g}$	6 000 g
2.	$14 \text{ m} = 14 \times 1000 \text{ mm} = 14\,000 \text{ mm}$ $= 14 \times 100 \text{ cm} = 1\,400 \text{ cm}$	2 nd answer
3.	1500 kg or 1.5 tonnes would be reasonable.	3 rd answer
4.	3 minutes = $3 \times 60 = 180$ seconds	4 th answer
5.	Length is 7.5 cm or 75 mm.	7.5 cm or 75 mm
6.	15 litres = $15 \times 1000 \text{ ml} = 15\,000 \text{ ml}$	15 000 ml
7.	2:50 + 55 minutes = 3:00 + 45 minutes = 3:45 pm	3:45 pm
8.	4 000 km would be reasonable.	2 nd answer
9.	3 kg + 3 units which are 200 g = 3600 g	3600 g
10.	4.5 kg + 1800 g = 4.5 + 1.8 kg = 6.3 kg	6.3 kg or 6 300 g

11.	6:33 to 6:55 = 55-33 = 22 minutes	1 st answer
12.	6:54 to 7:08 = 6 min + 8 min = 14 minutes	14 minutes
13.	If she was 12 min late she arrived at 5:52 Time from 5:52 to 6:44 = 8 min + 44 min = 52 min	52 minutes
14.	From 8:30 pm to 9:20 pm = 30 min + 20 min = 50 min	1 st answer
15.	3 tonnes = 3000 kg 3000 kg ÷ 50 kg = 300 ÷ 5 = 60 people.	3 rd answer
16.	6 megalitres = 6 000 000 litres 120 kilolitres = 120 000 litres $\frac{6000000}{120000} = \frac{600}{12} = 50$ days	50 days
17.	She uses 20 ml of milk for each and has 2 L = 2000 ml. Number of cakes = 2000 ÷ 20 = 100 Amount of flour needed = 100 × 120 = 12000 g = 12 kg of flour	4 th answer
18.	Mass of water = 12 kg. Number of cups = $\frac{12000ml}{300ml} = 40$ Mass of cups = 40 × 50g = 2000 g = 2 kg Total mass = 12 + 2 = 14 kg	14 kg

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ANSWERS

No.	WORKING	ANSWER
1.	$6500 \text{ ml} = 6500 \div 1000 = 6.5 \text{ litres}$	2 nd answer
2.	Kilometres would not be appropriate	4 th answer
3.	250 ml is a measuring cup	3 rd answer
4.	260 minutes = $260 \div 60 = 4$ with remainder 20 4 hours and 20 minutes	4 hours and 20 minutes
5.	$16:45 = 45 \text{ minutes past four in the afternoon}$ $= 15 \text{ minutes to five in the afternoon}$	4 th answer
6.	Length = $50 \times 40 \text{ cm} = 2000 \text{ cm} = 20 \text{ metres}$	20 m
7.	Increase = $8400 - 900 = 7500 \text{ g} = 7.5 \text{ kg}$	7.5 kg
8.	3500 steps = $3500 \times 0.8 \text{ metres} = 2800 \text{ metres}$. $2800 \text{ m} \div 1000 \text{ m} = 2.8 \text{ km}$	3.25 km
9.	Total weight = $1.5 \times 800 + 50$ = 1200 + 50 = 1250 kg = 1.25 tonnes	1 st answer

10.	<p>Amount of fuel = $4 \times 8 + 8 \times 250 \div 1000$ $= 32 + \frac{2000}{1000}$ $= 32 + 2$ $= 34$ litres</p>	34 litres
11.	<p>Time on clock = 9:30 Wake at 9:30 + 8:30 = 9:30 + 2:30 + 6:00 = 6:00 am Arrive at the bus at 6:00 + 1:20 = 7:20 am</p>	1 st answer
12.	<p>The 8:37 arrives at 9:20. Time taken = 23 min + 20 min = 43 minutes</p>	43 minutes
13.	<p>Needs to arrive 8 minutes before 9, so at 8:52. One tram arrives at 8:51, which leaves Swanson st at 8:09.</p>	8:09
14.	<p>8 cubic metres = $8 \times 100 \times 100 \times 100\text{cm}^3$ $= 8\ 000\ 000\ \text{cm}^3$ $= 8\ 000\ 000\ \text{ml}$ $= \frac{8000000}{1000}$ litres $= 8000$ litres</p>	8000 litres
15.	<p>The Monday before Saturday 22nd August 2015, is 17/8/2015 17 years before this is 1998 so date of birth is 17/8/1998.</p>	2 nd answer
16.	<p>Karen – 2 weights each of 12.5 = $2 \times 12.5 = 25$ kg Melody – 4 weights each of 6500 g = $4 \times 6.5 = 26$ kg Melody lifts 1 kg more than Karen.</p>	3 rd answer
17.	<p>1:54 + 56 min = 2:50 2:50 + 105 min = 3:50 + 45 min = 4:35 pm</p>	4:35 pm
18.	<p>$1\ m^2 = 100 \times 100\text{cm} = 10\ 000\ \text{cm}^2$ $0.5\ m^2 = \frac{10000}{2} = 5000\ \text{cm}^2$ Number of pieces = $\frac{5000}{250} = 20$ pieces</p>	20 pieces