High School
Mathematics Test 2013

Year 9

Basic Measurement

Non Calculator

Skills and Knowledge Assessed:

- Choose appropriate units of measurement for area and volume and convert from one unit to another (ACMMG195)
- Find perimeters and areas of parallelograms, trapeziums, rhombuses and kites (ACMMG196)
- Investigate the relationship between features of circles such as circumference, area, radius and diameter. Use formulas to solve problems involving circumference and area (ACMMG197)
- Investigate very small and very large time scales and intervals (ACMMG219)
- Express numbers in scientific notation (ACMNA210)

Name_____

Section 1 Short Answer Section

Write all working and answers in the spaces provided on this test paper.

1. Larissa lifts weights as a part of her exercise routine. Last week she was lifting 24.5 kg. This week she has added two 250g and four 500g weights to the bar. How much is she lifting this week?

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2. What is the perimeter of the field?

   (Give your answer in kilometres.)

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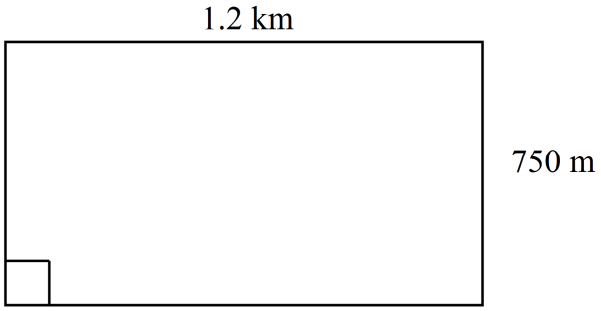
   …….

   …….



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3. Mitchell travels along the M1 freeway where traffic is moving freely at the speed shown on the dial.

   He has 135 km still to go till he reaches his exit. How long will it take to reach the exit?

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   …….

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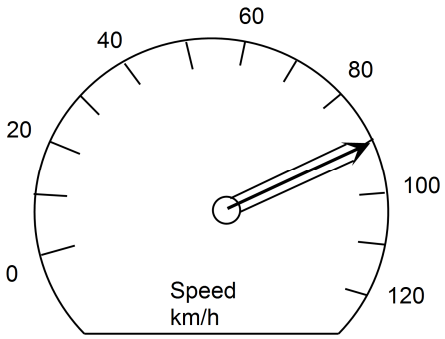

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4. Kobe has a cooler which hold some drinks for a picnic. There are four bottles which hold 1.25 litres each and one which holds 1.5 litres and six cans which each hold 350 mL. How many litres of drinks does Kobe have?

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5. Casey set out from Canberra for Robina at 7:50 a.m. She arrives at Robina 11 hours and 45 minutes later. What time did she arrive?

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6. What is the area of the triangle?

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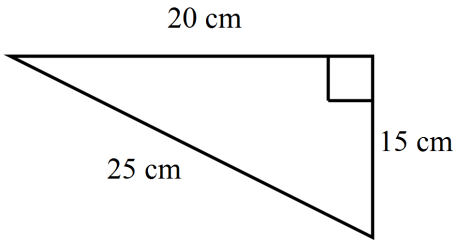

7. Using $\pi \approx 3.1$ calculate the circumference of the circle shown.

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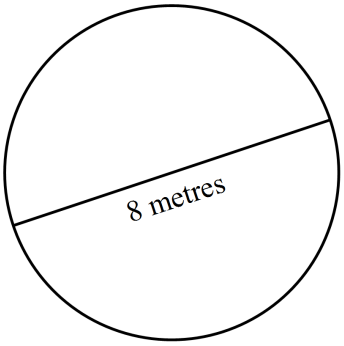

8. One of these clocks is fifteen minutes fast and the other in ten minutes slow.
What is the correct time?

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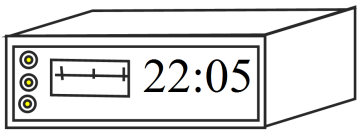

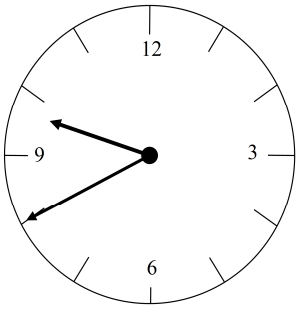

9. The distance from Earth to a meteorite is 1.2×10^8 km. Write this distance as a normal numeral.

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10. The margin between first and second in a swimming race was 17 milliseconds. The margin between second and third was 13 hundredths of a second. What was the margin between first and third?

……

……

High School
Mathematics Test 2013
Basic Measurement

Year 9

Calculator Allowed

Name_____

Section 2 Multiple Choice Section

Mark all your answers on the accompanying multiple choice answer sheet, not on this test paper. You may do any working out on this test paper. Calculators are allowed for this section.

1. Indiana catches a plane at Perth at 2:50 pm on Tuesday and travels to Kalgoorlie. He arrives back at Perth at 7:35 the next morning. How long was he away from Perth?

   A. 5 hours and 15 minutes B. 10 hours and 25 minutes

   C. 16 hours and 25 minutes D. 16 hours and 45 minutes

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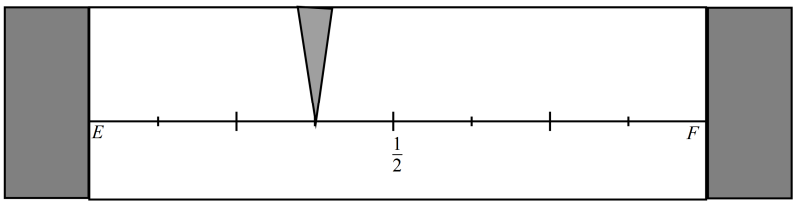
2. The fuel gauge on Matt's car is shown, when he pulled into a service station.

   It took 35 litres to fill the tank.

   How many litres does the tank hold?



   A. 34 L B. 40 L C. 56 L D. 80 L

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3. Dido walks 800 metres from her car to work each morning and back again each afternoon. How many days will she need to work to and from work to reach a total of 40 km?

   A. 5 days B. 25 days C. 50 days D. 125 days

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4. Lister needs to get from Ashfield to Everingham by train before 9:00 pm. What is the latest time he could catch the train at Ashfield and what time does he arrive at Everingham?

Station	PM	PM	PM	PM
Ashfield	6:15		8:12	
Browntown				
Coolabah	6:33	7:27	8:30	8:37
Daniels		7:39		8:49
Everingham		7:46		8:56
Foedham	6:59	7:53	8:59	9:03
Gosford	7:08	8:02	9:10	9:14
Hartleford	7:15	8:09	9:18	9:22

A. Catch the train at 6: 15 and arrive at 7:46.

B. Catch the train at 6: 15 and arrive at 8:56.

C. Catch the train at 8: 12 and arrive at 8:56.

D. Catch the train at 8: 12 and arrive at 8:59.

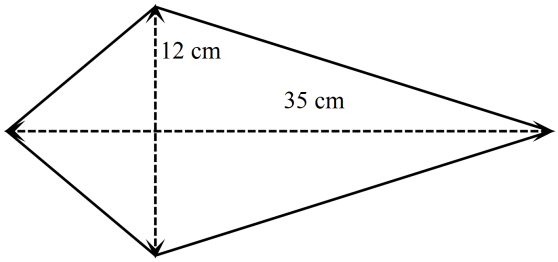
5. Sophie is planting seeds. A rule she uses is to plant the seed at a depth of twice the diameter of the seed. Broad bean seeds have a diameter of 1.8 cm and lettuce seeds have a diameter of 1.5 mm. How much deeper are the broad beans planted compared to the lettuce?

A. 3.3 cm deeper B. 3.6 cm deeper C. 3.9 cm deeper D. 4.2 cm deeper

6. What is the area of the kite?

A. $21cm^2$ B. $210\ cm^2$

C. $420\ cm^2$ D. $840\ cm^2$

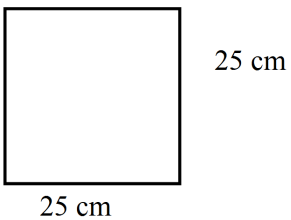


7. Water is running into the tank at a rate of 12 litres per minute. It takes 16 ½ hours and to fill the tank. What is the capacity of the tank?

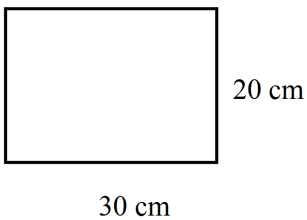
A. 198 L B. 5940 L C. 10 000 L D. 11 880 L

8. Chef Frederico will only have plates with an area between 500 cm^2 and 700 cm^2 in his restaurant. Which plate would not be acceptable at Frederico's restaurant?

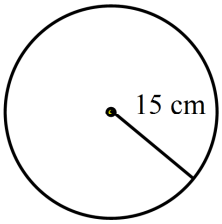
A.



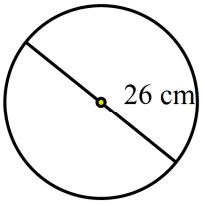
B.



C.



D.



9. The age of the Earth is about 4.54 billion years. If an Epoch is about 10 million years, how many epochs have there been since the Earth was formed?

A. 45.4 B. 454 C. 4 540 D. 45 400

10. The diameter of a certain virus is 2.0×10^{-7} metres. What is this as a normal numeral?

A. 0.000 000 2 m B. 0.000 002 m C. 0.000 02 m D. 0.000 2 m

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Mathematics Test 2013

Year 9

Basic Measurement

Calculator Allowed

Name_____

Section 3 Longer Answer Section

Write all working and answers in the spaces provided on this test paper.

Marks

1. Henry Parkes High is holding its athletics carnival next week, and Jack, the groundsman, is preparing the field.

   a) The field is circular and has a diameter of 120 m. Jack wants to spread fertiliser on the field which requires 1 litre of liquid fertiliser for each 1 000m^2.

      i) Calculate the area of the field in m^2 **1**

…….

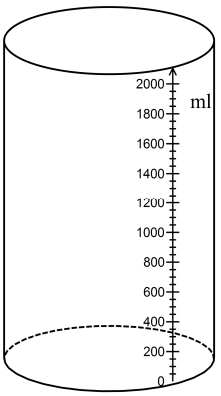
…….

      ii) Work out how many litres of fertiliser he will need to spread over the field. **1**

…….

…….

      iii) Jack uses the container shown to measure the liquid fertiliser he will need. **1**
      How many times will he need to fill it completely, and, if he also needs a partly filled container as well, mark with an arrow on the scale where he should fill it to?



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Marks

b) The longer running races (200 m, 400 m and 800 m) will be run on a circular track which runs around the inside of the field. There will be eight lanes each 1 metre wide and the outside lane will be five metres in from the edge of the field. What

i) What is the circumference of the inside lane? **2**

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ii) In the 800 m race the runners all move over and run in the inside lane. How many laps would be needed for the 800 m race? **1**

……

……

High School
Mathematics Test 2013

Multiple Choice Answer Sheet

Name _____

Completely fill the response oval representing the most correct answer.

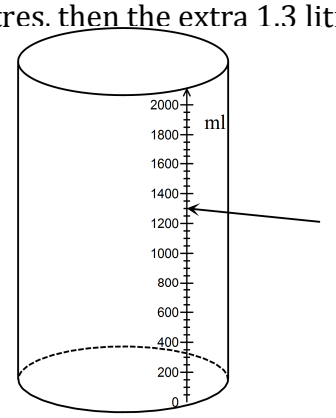
1.	A ⬭	B ⬭	C ⬭	D ⬭
2.	A ⬭	B ⬭	C ⬭	D ⬭
3.	A ⬭	B ⬭	C ⬭	D ⬭
4.	A ⬭	B ⬭	C ⬭	D ⬭
5.	A ⬭	B ⬭	C ⬭	D ⬭
6.	A ⬭	B ⬭	C ⬭	D ⬭
7.	A ⬭	B ⬭	C ⬭	D ⬭
8.	A ⬭	B ⬭	C ⬭	D ⬭
9.	A ⬭	B ⬭	C ⬭	D ⬭
10.	A ⬭	B ⬭	C ⬭	D ⬭

High School
Mathematics Test 2013
Basic Measurement

ANSWERS

Section 1	
1.	New mass = 24.5 kg + 2 × 0.25kg + 4 × 0.5 kg = 24.5 kg + 2.5 kg = 27.0 kg
2.	Perimeter = 2 × 1.2 km + 2 × 0.75 km = 2.4 km + 1.5 km = 3.9 km
3.	Time = 135 km ÷ 90 km/h = 1.5 hours
4.	Capacity = 4 × 1.25 L + 1.5 L + 6 × 0.35 L = 5 L + 1.5 L + 2.1 L = 8.6 L
5.	Time = 7 *Hrs* 50 *min* + 11 *hrs* 45 *min* = 18 *hrs* 95 *min* = 19 *hrs* 35 *min* = 19 :35 = 7 :35 *p.m.*
6.	Area $= \frac{1}{2} \times 20 \times 15$ $= 10 \times 15$ $= 150\ cm^2$
7.	Circumference = π × diameter = 3.1 × 8 = 24.8 metres
8.	Correct Time = 9 :40 *pm* + 10 *min* = 9 :50 *pm* *OR* = 21 :50
9.	1.2×10^8 km = 120 000 000 km
10.	17 milliseconds $= \frac{17}{1000}$ *s.* 13 hundredths sec $= \frac{13}{100} = \frac{130}{1000}$ Margin 1st to 3rd $= \frac{130}{1000} + \frac{17}{1000}$ $= \frac{147}{1000}$ = 147 milliseconds or .0147 sec

Section 2	
1.	D
2.	C
3.	B
4.	C
5.	A
6.	B
7.	D
8.	C
9.	B
10.	A

Section 3	
1.	a) i) Radius = 60 m. Area $= \pi \times 60^2 = 11\,310\ m^2$ (nearest m)
	ii) There are 11.3 lots of 1 000 m^2, so he will need 11.3 litres.
	iii) Need to fill it 5 times for 10 litres, then the extra 1.3 litres shown. 
	b) i) Radius of inside lane $= 60 - 5 - 8$ $= 47$ Circumference $= \pi d$ $= \pi \times 94$ $= 295\ m$
	ii) Need to run $800 \div 295 = 2.7$ laps of the track.

High School
Mathematics Test 2013

Multiple Choice Answer Sheet

Name Marking Sheet

Completely fill the response oval representing the most correct answer.

1.	A ○	B ○	C ○	D ●
2.	A ○	B ○	C ●	D ○
3.	A ○	B ●	C ○	D ○
4.	A ○	B ○	C ●	D ○
5.	A ●	B ○	C ○	D ○
6.	A ○	B ●	C ○	D ○
7.	A ○	B ○	C ○	D ●
8.	A ○	B ○	C ●	D ○
9.	A ○	B ●	C ○	D ○
10.	A ●	B ○	C ○	D ○