

COMMONWEALTH OF AUSTRALIA

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Family Name	
Given Names	
Student Number	
Teaching Period	Semester 2, 2016

FINAL EXAMINATION	DURATION				
TEP023 – Foundation Maths	<table border="1"> <tr> <td>Reading Time:</td> <td>10 minutes</td> </tr> <tr> <td>Writing Time:</td> <td>180 minutes</td> </tr> </table>	Reading Time:	10 minutes	Writing Time:	180 minutes
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Writing Time:	180 minutes				

INSTRUCTIONS TO CANDIDATES....

1. Write your full name and student number in the top right hand corner of this question paper.
2. Circle your lecturer/tutor's name:

Helena Trevena, Susi Bertei, Anjilin Lata, Suzie Jokic, Narges Rezvani Majid
3. **All questions must be answered directly on this question paper in the spaces provided.**
4. Read all questions carefully. Attempt all questions and show full working for each question.
5. Note that questions are not of equal value. Marks are indicated at the end of each question. The total number of marks for this paper is 100 marks.

EXAM CONDITIONS

You may begin writing from the commencement of the examination session.

The reading time indicated above is provided as a guide only.

This is a RESTRICTED OPEN BOOK examination

Any calculator is permitted

One A4 sheet of handwritten single-sided notes permitted

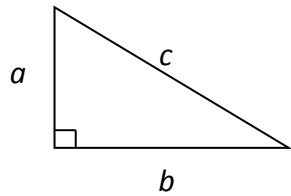
Any hard copy, unannotated English dictionary is permitted

ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED
No additional printed material is permitted.	Two pieces of scrap paper is to be provided.

**THIS EXAMINATION IS PRINTED
DOUBLE-SIDED.**

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BLANK.**

Formulae



$$c = \sqrt{a^2 + b^2}$$

Circumference of a circle = $2\pi r$

Area of a circle = πr^2

Area of a triangle = $\frac{1}{2}bh$

Question 1

[10 Marks]

Evaluate the following **without a calculator**.

a) -32.7×0.45

(2)

b) $10.254 \div 0.4$

(2)

c) $5 \times (4 \times 7 + 12) \div 10 - 6$

(3)

d) $3^4 \div 3 + \frac{\sqrt{36} - 70}{2^3}$

(3)

Question 2

[5 Marks]

You may use your calculator for the following questions.

- a) Express 195% as a decimal. (1) | b) Express $5\frac{1}{3}$ as a percentage correct to 1 decimal place. (1)
- c) Express 0.28 as a fraction in simplest form. (1)
- d) Matt and Simon entered two different Powerball syndicate draws. Both syndicates won the same total amount of money. In his syndicate, Matt received $\frac{16}{21}$ of the winnings, whilst Simon received $\frac{43}{54}$ of the winnings in his syndicate. Who won the most money? Show working to justify your answer. (2)

Question 3

[10 Marks]

Evaluate the following as fraction operations showing full sequential working. Give your answers as mixed numbers or fractions in their simplest form as appropriate.

a) $2\frac{2}{3} - 4\frac{1}{2}$

(3) | b) $1\frac{1}{3} \times 4\frac{3}{4}$ (2)

c) $\frac{15}{4} + \frac{3}{7} \div \frac{3}{14}$ (3)

Question 3 continued over

Question 3 continued

- d) Havilah (a mining company) is dividing up its shares: two-fifths of its shares are being sold to the public. The remaining shares are to be divided evenly amongst the six company directors. What fraction of the shares does each of the investors receive? (2)

Question 4

[4 marks]

Complete the table given below.

Ordinary Number	Scientific Notation
82395	
	7.86×10^{-5}
0.000377	
	8.9643×10^7

Question 5

[5 Marks]

A marathon swimmer swims $\frac{3}{7}$ of the race distance in the first hour and $\frac{2}{5}$ in the second hour.

Use fraction operations and show full working to calculate answers to the following questions. (HINT: Make equivalent fractions).

a) What fraction of the race distance has the swimmer left to swim? (2)

b) Was the swimmer faster or slower in the second hour compared to the first hour? (2)
Show working to justify your answer.

c) If the marathon is 14km in total, what distance did the swimmer cover in the first hour? (1)

Question 6

[10 Marks]

- a) During a mid-year sale, a toy store offered 35% discount on all toys in the shop. (2)
What would be the discount obtained on a toy with a marked price of \$72.80 and how much would you pay for the toy during the sale?
- b) To mix standard concrete, gravel, sand and cement are combined in the ratio (3)
5 : 3 : 1. If 27 tonnes of concrete are required for a shed foundation, how much gravel, sand and cement needs to be purchased?
- c) If the exchange rate between the Australian dollar (AUD) and the Great Britain (2)
pound (GBP) currency is \$1 AUD buys £0.48 GBP, calculate how much a purchase on the British Book Depository website for £7.99 GBP will cost in Australian dollars.

Question 6 continued over

Question 6 continued

- d) Steve paid \$568 for a new iPad. The price **included** the 10% GST. What was the cost of the iPad without GST and how much GST did Steve pay? (3)

Question 7

[5 Marks]

Evaluate the following algebraic expressions by substituting the values given for the variables.

a) $2x - 2y$ ($x = 4$ and $y = -2$) (2)

b) $\frac{3(ab - 4b)}{a^2}$ ($a = -3$ and $b = 4$) (3)

Question 8

[7 Marks]

Simplify the following algebraic expressions.

a) $3dw + 2d^2w - dw - 4wd^2 + 1$ (2)

b) $-15a^4h \div -5a$ (2)

c) $\frac{3x^2 \times 2y^2x}{-24yz}$ (3)

Question 9

[5 Marks]

Expand and simplify the following algebraic expressions.

a) $10y + 6y(6 + 2y)$ (2)

b) $3(3p + 4) - 4p(2pq - 2)$ (3)

Question 10

[5 Marks]

Factorise the following algebraic expressions.

a) $10k - 25$ (2)

b) $16c^2e + 20ce - 8ce^3f$ (3)

Question 11

[10 Marks]

Solve for the unknown pronumeral in algebraic equations. Show **logical** and **full sequential working**.

a) $8x - 3 = 29$ (2)

b) $\frac{x}{7} + 9 = 4$ (2)

c) $\frac{3x + 6}{9} = 0$ (2)

Question 11 continued over

Question 11 continued

d) $14 - 3a = 5 - 2a$ (2)

e) $-8(5 - 3b) = 2(b + 11)$ (2)

Question 12

[6 Marks]

a) Convert 55000000 m^2 to hectares and scientific notation. (2)

b) Convert $7.8 \times 10^4 \text{ kg}$ to mg . Give your answer as a conventional number. (1)

c) Calculate the speed of rotation of the earth at its equator given that the distance travelled in one rotation of a point on the earth's equator in one day is given by $d = 2 \times \pi \times 6.38 \times 10^6 \text{ m}$. Give your answer in (i) km/hr and (ii) ms^{-1} . (3)

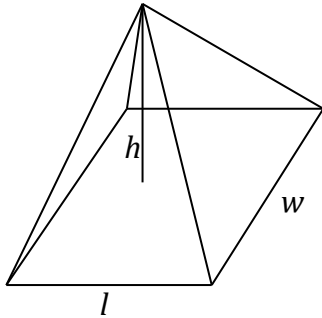
Question 13

[6 Marks]

The volume of a rectangular based pyramid can be calculated using the formula $V = \frac{1}{3}lwh$ where l is the length of the base of the pyramid, w is the width of the base and h is the height of the pyramid.

a)

(2)



Transpose (change) the formula given above to make w the subject.

b) Determine what width the pyramid would need to be if it was to have a volume of 2800cm^3 and a length of 50cm and height of 5.6cm . (2)

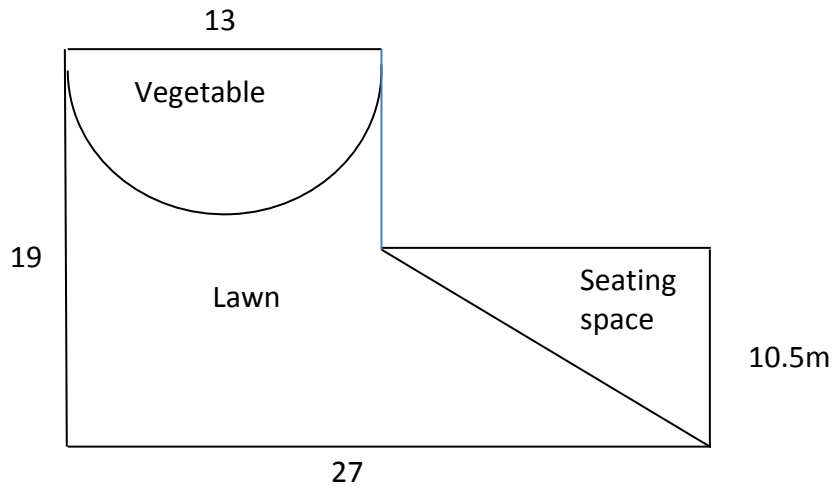
c) If the height of the pyramid was doubled, but the length and width stayed the same, how many litres of water could the pyramid hold? (2)

(Note: $1 \text{ litre} = 1000 \text{ cm}^3$)

Question 14

[12 Marks]

A playground for a primary school is being redeveloped. The proposed plans for the playground consist of a semi-circular vegetable garden, a triangular paved seating space and the remaining area to be covered in lawn, as shown on the diagram below.



- a) Calculate length of the long slant edge of the seating space. (2)
- b) Garden edging is to be purchased for the straight edge and the curved length of the vegetable garden. It is available in 5m length rolls at a cost of \$11.98 per roll. How much will the garden edging cost in total? (3)

Question 14 continued over

Question 14 continued

c) Calculate the area of the playground that will be used as lawn. (4)

d) If 40 m^3 of soil is to be delivered to provide a bed or soil for the lawn, calculate the depth of the soil to the nearest centimetre. (3)

END OF EXAMINATION