School of Indigenous Studies

Preparation material for placement assessments for the Aboriginal Orientation Kit and the UWA Smart Start Course
About this kit:
This preparation kit is designed to assist applicants prepare to sit the placement tests for the Aboriginal Orientation Course and the UWA Smart Start Course. Please bear the following in mind as you look at the materials enclosed:

- The practice materials are for you to “clear out the cobwebs” and “get back into the saddle”. Especially if you have been outside of formal education for a while, these activities may help you to recall knowledge and abilities that you obtained some time ago. In turn, that will help us best match you to an enabling pathway to study at UWA.
- All applicants are required to sit the writing test. We use your writing test along with your formal and informal learning achievements to assess your writing skills.
- All applicants are encouraged to sit the maths test, but only those wishing to enter the Science Stream of an enabling course are required to sit the maths test. Please refer to the website for further information about which enabling course units are included in the Science Stream and how these relate to your degree studies.
- The sample material in this kit does not cover all topics in the actual test, but provides an indication of the breadth and depth of the test.
- **Please do not be discouraged by the sample material.** If you are interested in studying at UWA, we are keen to meet you and provide you with every opportunity and guidance we can. We are very good at assessing applicants with a wide range of backgrounds and abilities, so please come and meet us!

Further resources
There is a good range of freely available material that may assist you in refreshing your knowledge further, should you be inclined.

For maths, we recommend the Khan Academy.

https://www.khanacademy.org/

For writing, we recommend Purdue University’s Online Writing Lab:

https://owl.english.purdue.edu/owl/
Sample Written Assessment for Aboriginal Orientation Course & UWA Smart Start

Instructions:

Read through the following FIVE questions (on the next three pages) and write an essay of at least between 1.5 – 2 pages on any ONE topic in the Booklet.

Note that you should introduce the topic in approximately one paragraph (6 or more sentences), and then write 4 – 5 paragraphs to develop your point of view/your essay and then a concluding paragraph.
Essay Topics: Read all topics/questions BUT write on only ONE

1. A Sense of Place
For some of us, certain places hold special meaning, whether it is the place we call home, where we were born or where we spent our childhood. It could be an imaginary place or somewhere we feel a strong attachment through experience such as the beach or a journey. Write an essay that explains the importance to you of a certain place.

OR

2. Social Media – Facebook, Twitter, etc.:
Discuss the pros and cons (advantages and disadvantages) for Australian society of social media.

OR

3. An Australian story
Select a film, book or song that best captures what being Australian means to you. Explain your choice.

OR

4. If I could change one aspect of Australian society, it would be.................
Write an essay on an aspect of Australian society which needs to be changed, explain what it is and why you believe a change is necessary.

OR
5. Study the TWO photographs on this page (photo 1) and over the page (photos 2 and 3)
a) as a journalist for a local newspaper, write an article based on ONE of the photos.
OR
b) write a story, give the characters names and imagine the situation.
 You should give your article or story a title and briefly state why you have selected that title

Photo 1)

Photo 2)
SAMPLE MATHEMATICAL ASSESSMENT

GIVEN NAMES: __________________________  SURNAME: __________________________

What is the highest level of mathematics you have done in the past, and how long ago was it?

What are the maths topics that have challenged you the most?

What are the maths topics that you are most competent in?
What degree course do you intent to do (in either 2016 or after the completing the Orientation Course)?

Instructions:

- Attempt to answer as many of the questions as you can.
- Show any working out in the space provided.
- Time allowed: 30 mins
1. Convert the decimals, fractions and percentages by completing the table below:

<table>
<thead>
<tr>
<th>Decimal</th>
<th>Fraction</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>1/2</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>2/3</td>
<td>110%</td>
</tr>
<tr>
<td>0.07</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Write the answer to each of the following as a fraction:
   (a) \( \frac{2}{5} + \frac{1}{4} = \)
   (b) \( \frac{2}{3} - \frac{3}{8} = \)
   (c) \( \frac{4}{7} \times \frac{3}{8} = \)
   (d) \( \frac{4}{5} + \frac{1}{3} = \)

3. Calculate the following indices:
   (a) \( 2^2 \times 2^3 = \)
   (b) \( 2^3 + (-16) + (-4) = \)
   (c) \( (2^3)^2 = \)
   (d) \( \sqrt{81} = \)
4. Evaluate the following:
   (a) \( 4 + (-9) = \)  
   (b) \(-12 - 8 = \) 

   (c) \( 2 \times (-3) + 15 = \)  
   (d) \( (-4) \times (-3) \times (-2) = \) 

   (e) \( \left[ (3^2 - 4) \times 3 \right] + 10 \div 5 = \) 

5. For the set of data \{3, 3, 6, 8\} find the:
   (a) mean 
   (b) range 

   (c) median 
   (d) mode 

6. Using the formula \( v = u + at \):
   (a) Transpose the formula to make \( t \) the subject. 

   (b) Hence find \( t \) when \( v = 10 \), \( u = 15 \) and \( a = 2 \).
7. A variable is a letter used to represent a number. Find the value of the variable in the following equations:
   (a) \(13 + b = 16\)  
   (b) \(24 - t = 17\)  
   (c) \(3x - 14 = 7\)  
   (d) \(\frac{p}{4} + 1 = 5\)  
   (e) \(8 + 5m = -2m - 6\)

8. Simplify the following algebraic expressions by division, removing brackets and/or collecting like terms. Express the answers with positive indices.
   (a) \(8y^2 + 6xy + 5y^2 - 2xy\)  
   (b) \(\frac{5a^2b \times 2ab^3}{4b^5}\)  
   (c) \(\frac{8x^3 + 2x^2 - 12x}{2x}\)  
   (d) \(2m(4m - n) + (2m + 3n)(6m - n)\)
9. Factorise (take out the common factor) the following algebraic expressions:
   (a) $8a - 6a^2$
   (b) $m^2 - 7m + 12$

10. The sum of two numbers is 21 and their difference is 9. Write two algebraic equations to express the information and then solve them to find the two numbers.

11. Solve the following ratio and proportion problems:
    (a) If a cyclist travels 32km in 2 hours, how far does she travel in 5 hours?
        (Assume she maintains the same speed.)
    (b) If 2 painters take 6 days to paint a house, how long would it take 3 painters to paint the same house?
12. (a) On the Cartesian plane below plot the points A(1, 4) and B(-3, 2). The point C(2,1) is shown as an example.

(b) On the same Cartesian plane, graph the line $y = 2x - 1$. 
13. Solve the following systems of simultaneous equations:

(a) \[
\begin{align*}
7x - 2y &= 16 \\
5x + y &= 9
\end{align*}
\]

(b) \[
\begin{align*}
y &= x^2 - 4 \\
3x + y &= 6
\end{align*}
\]
What is the highest level of mathematics you have done in the past, and how long ago was it?

What are the maths topics that have challenged you the most?

What are the maths topics that you are most competent in?

What degree course do you intend to do (in either 2016 or after the completing the Orientation Course)?

Instructions:
- Attempt to answer as many of the questions as you can.
- Show any working out in the space provided.
- Time allowed: 30 mins
1. Convert the decimals, fractions and percentages by completing the table below:

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<tbody>
<tr>
<td>0.5</td>
<td>(\frac{1}{2})</td>
<td>50%</td>
</tr>
<tr>
<td>0.4</td>
<td>(\frac{4}{10} = \frac{2}{5})</td>
<td>40%</td>
</tr>
<tr>
<td>0.6</td>
<td>(\frac{2}{3})</td>
<td>66% or 66.6%</td>
</tr>
<tr>
<td>1.1</td>
<td>(\frac{1}{10})</td>
<td>110%</td>
</tr>
<tr>
<td>0.07</td>
<td>(\frac{7}{100})</td>
<td>7%</td>
</tr>
</tbody>
</table>

2. Write the answer to each of the following as a fraction:

(a) \(\frac{2}{5} + \frac{1}{4} = \frac{8 + 5}{20} = \frac{13}{20}\)
(b) \(\frac{2}{3} - \frac{3}{8} = \frac{16 - 9}{24} = \frac{7}{24}\)

(c) \(\frac{14}{7} \times \frac{3}{8} = \frac{3}{14}\)
(d) \(\frac{4}{5} + \frac{1}{3} = \frac{4 \times 3}{5} = \frac{12}{5} = 2\frac{2}{5}\)

3. Calculate the following indices:

(a) \(2^2 \times 2^3 = 2^{2+3} = 2^5 = 32\)
(b) \(2^3 + (-16) + (-4) = 8 + 4 = 12\)

(c) \((2^3)^2 = 2^6 = 64\)
(d) \(\sqrt{81} = 9\)
4. Evaluate the following:

(a) \[ 4 + (-9) = 4 - 9 = -5 \]

(b) \[ -12 - 8 = -20 \]

(c) \[ 2 \times (-3) + 15 = -6 + 15 = 9 \]

(d) \[ (-4) \times (-3) \times (-2) = -24 \]

(e) \[ \left( \frac{3^2 - 4}{3} \right) + 10 + 5 = \frac{5 \times 3 + 10}{5} = 17 \]

5. For the set of data \{3, 3, 6, 8\} find the:

(a) mean = \[ \frac{3 + 3 + 6 + 8}{4} = \frac{20}{4} = 5 \]

(b) range = \[ 8 - 3 = 5 \]

(c) median = \[ \frac{3 + 6}{2} = 4.5 \]

(d) mode = 3

6. Using the formula \( v = u + at \):

(a) Transpose the formula to make \( t \) the subject.

\[ \frac{v - u}{a} = \frac{at}{a} \]

\[ t = \frac{v - u}{a} \]

(b) Hence find \( t \) when \( v = 10 \), \( u = 15 \) and \( a = 2 \).

\[ t = \frac{10 - 15}{2} = -\frac{5}{2} \]

\[ t = -2 \frac{1}{2} \quad (= -2.5) \]
7. A variable is a letter used to represent a number. Find the value of the variable in the following equations:
   (a) \(13 + b = 16\) \((-13)\) \(b = 3\)
   (b) \(24 - t = 17\)
   \(24 - 17 = t\)
   \(t = 7\)

   (c) \(3x - 14 = 7\) \((+1)\)
   \(3x = 21\) \((+3)\)
   \(x = 7\)

   (d) \(\frac{p}{4} + 1 = 5\) \((-1)\)
   \(\frac{p}{4} = 4\) \((\times 4)\)
   \(p = 16\)

   (e) \(8 + 5m = -2m - 6\) \((+2m - 3)\)
   \(7m = -14\) \((\div 7)\)
   \(m = -2\)

8. Simplify the following algebraic expressions by division, removing brackets and/or collecting like terms. Express the answers with positive indices.
   (a) \(8y^2 + 6xy + 5y^2 - 2xy\)
   \(= 13y^2 + 4xy\)

   (b) \(\frac{5a^2 b \times 2ab^3}{2a b^5}\)
   \(= \frac{5a^3 b^4}{2b^5}\)
   \(= \frac{5a^3 b}{2b}\)

   (c) \(\frac{8x^3 + 2x^2 - 12x}{2x}\)
   \(= \frac{8x^3}{2x} + \frac{2x^2}{2x} - \frac{12x}{2x}\)
   \(= 4x^2 + x - 6\)

   Or \(\frac{2x(4x^2 + x - 6)}{2x}\)
   \(= 4x^2 + x - 6\)

   (d) \(2m(4m - n) + (2m + 3n)(6m - n)\)
   \(= 8m^2 - 2mn + 12m^2 - 2mn + 18mn - 3n^2\)
   \(= 20m^2 + 14mn - 3n^2\)
9. Factorise (take out the common factor) the following algebraic expressions:
   (a) \( 8a - 6a^2 \)  
       \[ = 2a(4 - 3a) \]
   (b) \( m^2 - 7m + 12 \)  
       \[ = (m - 3)(m - 4) \]

10. The sum of two numbers is 21 and their difference is 9. Write two algebraic equations to express the information and then solve them to find the two numbers.

   \[ a + b = 21 \quad \text{(1)} \]
   \[ a - b = 9 \quad \text{(2)} \]

   \[ \text{Subs } a = 15 \text{ into (1)} \]
   \[ 15 + b = 21 \]
   \[ b = 6 \]

   Solution is \( a = 15, b = 6 \).

   i.e., The two numbers are 6 and 15.

11. Solve the following ratio and proportion problems:
   (a) If a cyclist travels 32km in 2 hours, how far does she travel in 5 hours? 
   (Assume she maintains the same speed.)

   \[ d = \frac{32 \text{km}}{2 \text{hr}} \times 5 \text{hr} \]
   \[ = 16 \times 5 \]
   \[ = 80 \text{km} \]

   \[ \text{direct proportion} \]

   (b) If 2 painters take 6 days to paint a house, how long would it take 3 painters to paint the same house?

   \[ \frac{2 \text{painters}}{6 \text{days}} \times \frac{3 \text{painters}}{x \text{days}} = 2 \]
   \[ \frac{1 \text{painter}}{12 \text{days}} \times \frac{3 \text{painters}}{y \text{days}} = \]

   \[ \text{inverse proportion} \]
12. (a) On the Cartesian plane below plot the points A(1, 4) and B(-3, 2). The point C(2,1) is shown as an example.

(b) On the same Cartesian plane, graph the line \( y = 2x - 1 \).
13. Solve the following systems of simultaneous equations:

(a) \[\begin{align*}
7x - 2y &= 16 \\
5x + y &= 9
\end{align*}\]

\[\begin{align*}
10x + 2y &= 18 \quad \text{(3)}
\end{align*}\]

0 + (3) \[\begin{align*}
17x &= 34 \\
x &= 2
\end{align*}\]

Subs \(x = 2\) into (2)

\[\begin{align*}
5x + y &= 9 \\
10 + y &= 9 \\
y &= -1
\end{align*}\]

Solution is \(x = 2, y = -1\) \((2, -1)\)

(b) \[\begin{align*}
y &= x^2 - 4 \\
3x + y &= 6
\end{align*}\]

Subs (1) into (2)

\[\begin{align*}
3x + x^2 - 4 &= 6 \\
x^2 + 3x - 10 &= 0 \\
(x + 5)(x - 2) &= 0
\end{align*}\]

\[\begin{align*}
x + 5 &= 0 \quad \text{or} \quad x - 2 = 0 \\
x &= -5 \quad \quad \quad x = 2
\end{align*}\]

\[\begin{align*}
\therefore \quad y &= (-5)^2 - 4 \\
y &= 25 - 4 \\
y &= 21
\end{align*}\]

\[\begin{align*}
\therefore \quad y &= 2^2 - 4 \\
y &= 4 - 4 \\
y &= 0
\end{align*}\]

Solutions are \(x = -5, y = 21\) and \(x = 2, y = 0\) \((-5, 21), (2, 0)\)

End of Questions