JAMES COOK
UNIVERSITY
AUSTRALIA

Pre-enrolment Numeracy Stock-take for the Masters of Teaching & Learning

The mathematics required to complete this test gives you an idea of the mathematical knowledge that is assumed you have upon entering the Masters of Teaching & Learning at JCU.

The general guideline that indicates the level of maths required is the mathematics and numeracy of the Australian Curriculum up to and including year 9 mathematics (http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?layout=1).

The full solutions are provided so that you can correct your work and make a judgement about your preparedness for the Masters of Teaching & Learning course you are planning to pursue. Recommended resources are listed to help you refresh your maths knowledge.

An invigilated test of similar material will take place in the first week of the semester next year. The results of that test will be used to provide you with advice about any remedial actions that may be necessary to satisfy the proficiency required for teaching at the primary school level.

There are 21 questions in this stock-take. Please complete the test showing all working before you correct it.

Calculators are not to be used.

1. Calculate the following: $3 - 3 \times 2 =$

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2. Calculate the following: $9.65 + 2.09 =$

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_____

3. Calculate the following: $14.5 - 6.02 =$

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4. Calculate the following: $1.2 \times 0.2 =$

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5. Calculate the following: $896 \div 7 =$

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_____

6. Calculate the following: $\frac{1}{2} + \frac{1}{3} =$
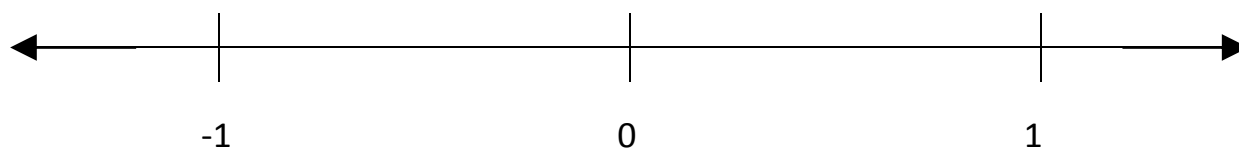
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7. Rounded to the nearest 10 kg the weight of a dolphin was reported as 170 kg. Write down the lowest weight (in whole kg) that the dolphin could have been before the rounding. Provide an explanation for your answer.

Lowest weight: _____

Explanation:

_____
_____
_____
_____

8. How many different fractions are there between $\frac{2}{5}$ and $\frac{3}{5}$? Explain your answer.

_____
_____
_____
_____

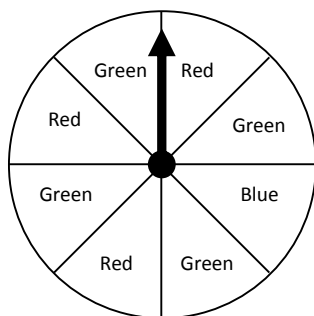9. Estimate the location of the numbers 0.3 and $\frac{1}{6}$ on the number line below. Label each number clearly. What was your reasoning?

-1   0   1

_____
_____
_____

10. Peter was 120 cm tall on his ninth birthday. By his tenth birthday he had grown 20% taller. How tall was Peter when he turned ten? Show your working.

_____
_____
_____
_____

11. A spinner is a device often used to generate random outcomes for games. An arrow is pinned to the centre of a coloured disk and spun around by flicking it with a finger. The outcome is determined by the colour of the section where the arrow head stops.

    What is the probability of getting green on the spinner disk shown below when the arrow is spun? What is your reasoning?

    _____
    _____
    _____

12. Sue is in charge of the year Seven cohort at a school. There are five classes with between 20 and 30 students in each class. They all did the same maths test and the teachers have given Sue the average mark for their class (see below).

	Class I	Class II	Class III	Class IV	Class V
Average of each class:	60	80	70	80	90

    Sue would like to tell the principal the average for the whole year seven cohort. She adds up the five marks and divides by five. You stop her as she is about to go to the principal and you say: "Sue, that is not right!" What explanation do you give Sue for why she is not correct? What do you tell Sue she has to do?
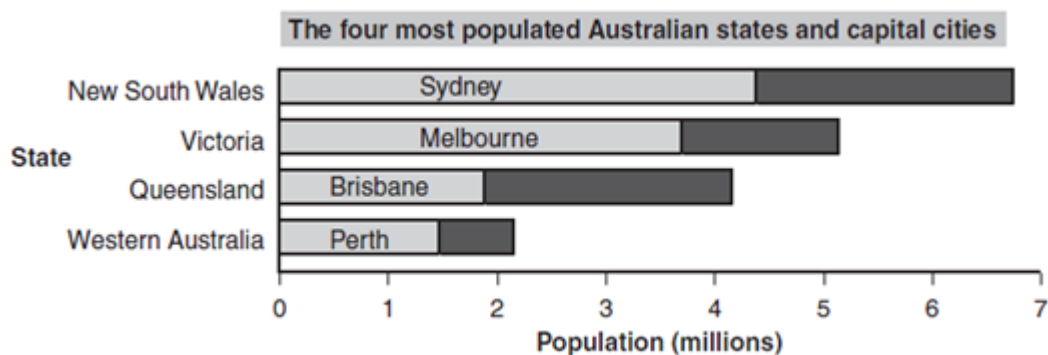
    _____
    _____
    _____
    _____

13. In a recipe, 6 cups of sugar are required for every 10 cups of flour. How much sugar do you need if you have 20 tablespoons of flour?

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    _____
    _____
    _____

14. The time of the clock below is 5 o'clock. What is the size of the smaller angle created between the hour hand and the minute hand on the clock? Show your working near the image.

(Adapted from Naplan Example Test Yr7)

15. Each bar of this graph shows the population of a state and the population of its capital city.
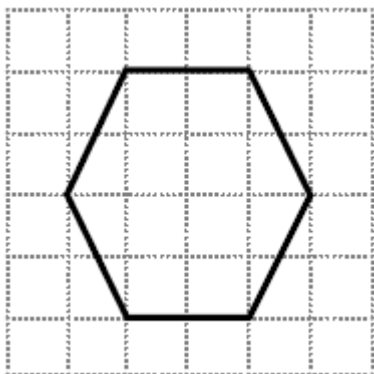

The four most populated Australian states and capital cities

Which of these states has the lowest percentage of its population living in the state capital? What is your reasoning?

    a.   New South Wales
    b.   Victoria
    c.   Queensland
    d.   Western Australia

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_____
_____
_____

(Naplan Example Test Yr7)

16. A six-sided figure is drawn on a centimetre square grid as shown. What is the distance around the edge of the figure? Write your explanation.

   a.   12 cm

   b.   more than 12 cm

   c.   less than 12 cm

   d.   you cannot tell

_____
_____
_____

(Ryan & McCrae, 2005)

17. If a is equal to 6, then what does $a^2 + 9$ equal?
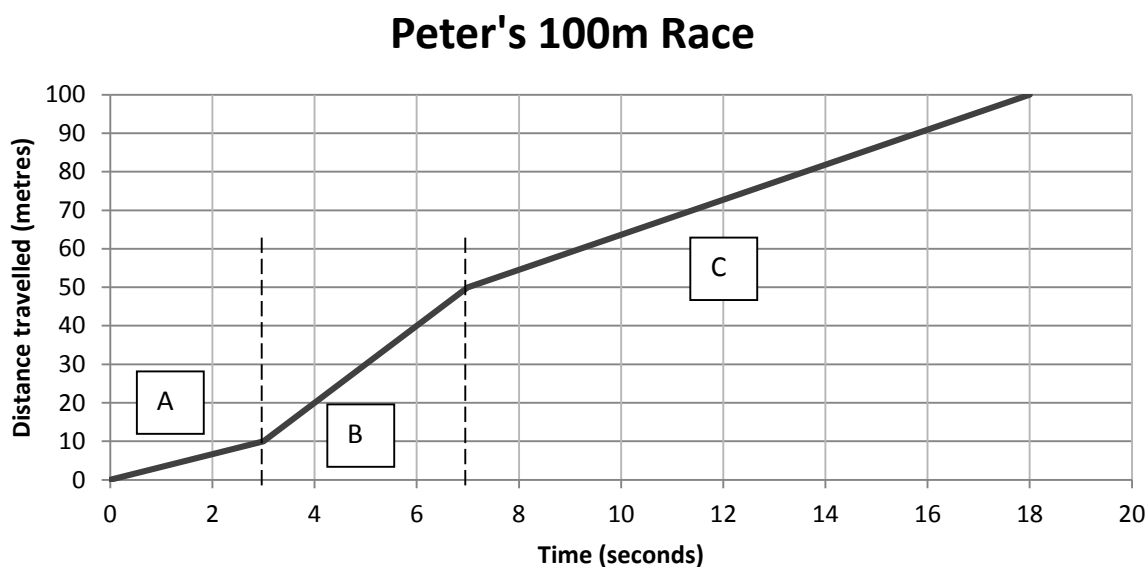
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18. Claire thinks of a number, n.
   She multiplies the number by itself.
   She then halves that number and subtracts 10.
   Select an expression from the choices below to show what Claire did.

(Naplan Example Test Yr9)

   a. $\dfrac{2n-10}{2}$

   b. $\dfrac{2n}{2} - 10$

   c. $\dfrac{n^2}{2} - 10$

   d. $\dfrac{n^2-10}{2}$

19. Find the value of x if $4x - 3 = 11$. Show your working.

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_____

20. Peter ran in a 100 metre race. The graph below shows the distance Peter travelled and the time it took.

Peter's 100m Race

There are 3 distinct phases to Peter's race, A, B and C. Identify in which phase of the race was Peter going his fastest and <u>explain</u> your answer by referring to the graph.

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21. A passenger train leaves the train depot 2 hours after a freight train left the same depot. The freight train is traveling on average 40 kms per hour more slowly than the passenger train. **Find the average speed of each train**, if the passenger train overtakes the freight train in three hours. Draw a diagram to help you. Show all working.

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