PERTH MODERN SCHOOL
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Independent Public School

Course Methods Year 11

Student name: _____ Teacher name: _____

Date: 27/07/20

Task type: **Response**

Time allowed for this task: **30 mins**

Number of questions: **5**

Materials required: NO CALCULATORS ALLOWED
ONE A4 PAGE BOTH SIDES OF NOTES ALLOWED
FORMULA SHEET PROVIDED

Standard items: Pens (blue/black preferred), pencils (including coloured), sharpener, correction fluid/tape, eraser, ruler, highlighters

Special items: Drawing instruments, templates and formula sheet

Marks available: **30 marks**

Task weighting: **8 %**

Formula sheet provided: **Yes**

Note: All part questions worth more than 2 marks require working to obtain full marks.

Question 1 (1.3.2) (2, 2 = 4 marks)

Evaluate and express your answer in whole numbers.

i) $6!$

ii) $\binom{10}{6}$

Question 2 (1.3.1) (2, 3 = 5 marks)

a) Expand $(1-x)^4$ in ascending powers of x. Express your answer as whole numbers.

b) Show how you would use your answer in (a) to calculate the value of 0.99^4. State this value correct to 4 decimal places.

Question 3 (1.3.2) (1, 1, 1, 2, 2 = 7 marks)

The Australian Chess team of 9 people is to be selected from 10 from West Australia, 8 from NSW and 5 from Victoria. Write mathematical expressions for the number of different ways the team can be selected if:

a) There are no restrictions

b) All three states are equally represented.

c) There are no Victorians

d) The NSW representatives are in the majority

e) The WA husband and wife pair Elise and Nathan can only afford to have one of them in the team.

Question 4 (1.2.7) (1, 1, 1, 1, 2, 2 = 8 marks)

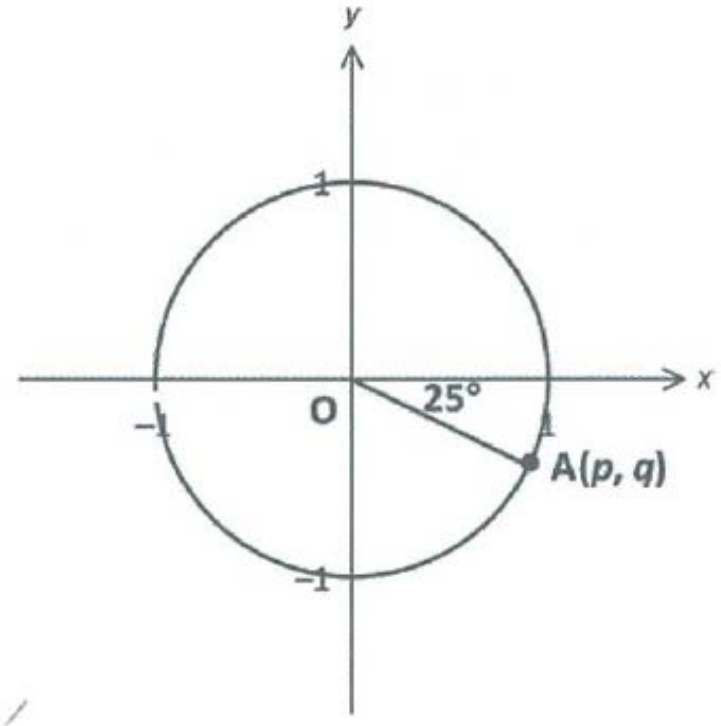
The diagram shows a unit circle with centre O. A is a point on the unit circle with co-ordinates (p, q). The ray OA is inclined at an angle of $25°$ to the positive x-axis as shown.
Use the unit circle to find in terms of p and/or q:

a) cos $-25°$

b) sin $(25°)$

c) cos $(155°)$

d) sin $(205°)$



e) tan $(115°)$

f) tan $(-155°)$

Question 5 (1.2.8) (2, 2, 2 = 6 marks)

What are the exact values of

a) $\sin\left(-\frac{2\pi}{3}\right)$

b) $\tan\left(\frac{15\pi}{6}\right)$

c) $\cos 210°$

END OF TEST