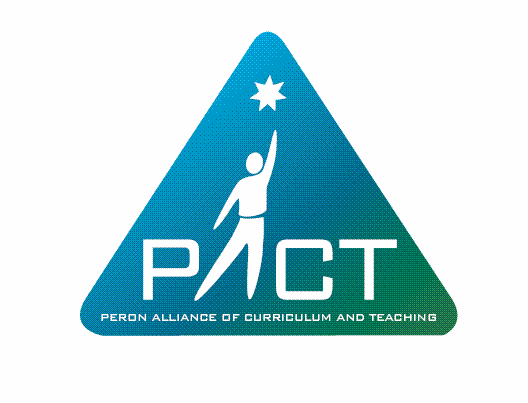
Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

50

= %

**METHODS 11 MAT 1**

**Test 2 2015**

**Topics: Trigonometry, Indices & Scientific notation**

**Total Time:**  *55minutes*  **Weighting:** *6% of the year.*

*This test comprises of* ***TWO sections****. The* ***first section*** *is* ***calculator free*** *where no calculators of any kind are to be used. The* ***second section*** *is* ***calculator assumed*** *where the CAS calculator may be used. All questions must be answered in both sections.* ***Answers should be rounded to 2 decimal places unless specified****. All working should be shown in the space provided. Solutions without working may not be awarded full marks. Please take the marks for each question into account when answering the question.*

**SECTION 1: CALCULATOR FREE**

**Time:** 25 minutes**Equipment Allowed:** Nil

**Marks for Section 1:** *23 marks*

**1. [4 marks – 1, 1, 2]**

**a)** Express each of the following as a power of 4:

(i) **** (ii) ****

46 x 42 = 48 **🗸**  46/ 4n = 46-n **🗸**

**b**) Simplify the following, expressing your answer in scientific notation

(6.1 x 10-7) x (2 x 103) = 12.2 x 10-4 **🗸**

**=** 1.22 x 10-3 **🗸**

**2. [9 marks – 1, 1, 2, 5]**

Simplify each of the following, expressing solutions with positive powers (where applicable):

**a) ** 4b4 **🗸 b) ** 6a3 **🗸**

**c) ** a 7/2 ÷ a3/2 **🗸 d) **

a2 **🗸** 3n . 32 + 3n **🗸 ÷** 22.3n – 2×3n.31 **🗸**

3n (32 +1) **🗸 ÷** 3n (22 -2×3) **🗸**

10/-2 = -5 **🗸**

**3. [7 marks – 3, 4]**

Solve each of the following for n:

**a)**  **b)** 43n+1 = 32

53n × 52 = 514 (22)3n+1 = 25 **🗸**

53n+2 = 514 **🗸** 26n + 2 = 25 🗸

3n +2 = 14 **🗸** 6n+ 2 = 5 🗸

n = 4 🗸 n = ½ 🗸

**4. [3 marks]**

If sin 30o = 0⋅5 and sin 50 o ≈ 0⋅8, determine the value of *x*, to 2 decimal places.



🗸

**x =**

x = 8 ×0.8 ÷ 0.5 🗸

x = 12.8 m 🗸

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**~ END OF TEST SECTION 2 ~**