St. Peter the Apostle High School

Mathematics Dept.



PracticePrelim SixPaper 2

Duration: 1 Hr 20 Mins

Marks: 44

- 1. Attempt ALL questions.
- 2. You <u>MAY</u> use a calculator.
- 3. Write your solutions on the blank paper provided.
- 4. Full credit will be given only where the solution contains appropriate working.
- 5. Square-ruled paper will be provided if necessary.

Formula Sheet

The roots of
$$ax^2 + bx + c = 0$$
 are $x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$

Sine rule:

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

Cosine rule:

$$a^{2} = b^{2} + c^{2} - 2bc \cos A$$
 or $\cos A = \frac{b}{c}$

$$=\frac{b^2+c^2-a^2}{2bc}$$

Area of a triangle: Area = $\frac{1}{2}ab \sin C$

Volume of a sphere: Volume = $\frac{4}{3}\pi r^3$

Volume of a cone: Volume = $\frac{1}{3}\pi r^2 h$

Volume of a pyramid: Volume =
$$\frac{1}{3}Ah$$

Standard deviation:
$$s = \sqrt{\frac{\sum (x - \overline{x})^2}{n - 1}} = \sqrt{\frac{\sum x^2 - (\sum x)^2 / n}{n - 1}}$$
, where n is the sample size.

4

Miss Pitstop has just bought a brand new car costing £17 500. During the first year the value of the car is predicted to fall by

14% then by 6.5% every successive year thereafter.

How much is the car worth after 4 years? Give your answer correct to 2 significant figures.

1.

2. The number of telephone calls a Call Centre receives every hour over a twelve hour period on a weekday is recorded and the results are shown below.

> 42 49 48 52 55 57 44 59 50 46 45 41

- **a**) Find the mean and standard deviation for the data given above.
- **b**) The same recordings were taken over a 12 hour period during the weekend. The mean number of calls taken was 54 and the standard deviation was 3.6.

Make two comparisons between data recorded on a weekday and data recorded on a weekend.

3. Calculate the area of cloth used to make this triangular club pennant, with sides 18cm, 25cm and 28cm, as shown below.

4. Solve the following equation giving your answer correct to 1 decimal place.

$$3x^2 - 7x - 5 = 0$$

- 5. Trig Graphs - Not covered yet!
- Mr Bell paid a bill for £1 706.60 to his builders for a roof repair. 6. This price included a discount of 8% for paying his bill on time. How much extra would Mr. Bell have had to pay if he had been late with his payment?







5

Marks

2

4

4

<u>Marks</u>

7. The lengths of the sides of a right angled triangle are 2a cm, (2a + 1) cm and (a - 5) cm.



- **10.** Trig Equations Not covered yet!
- 11. One gram of GOLD cost £10.89 and one gram of SILVER costs £0.42.
 A jeweler has 2 spheres which have mathematically similar weights.
 The Gold sphere costs £555.40 and has a radius of 2.3cm.
 The Silver Sphere costs £130.20.
 Calculate the radius of the Silver Sphere.
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End of question Paper