

Name: _____

Class: _____



**ST ANDREW'S
CATHEDRAL
SCHOOL**
Founded 1885

SEMESTER TWO EXAMINATION 2008

YEAR 9

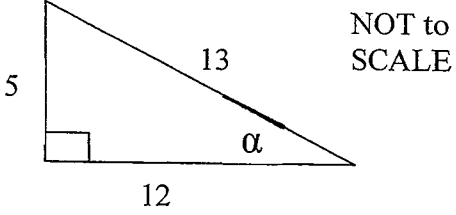
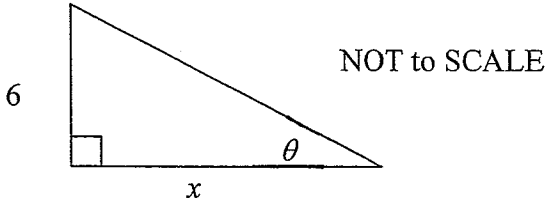
Stage 5.3 MATHEMATICS

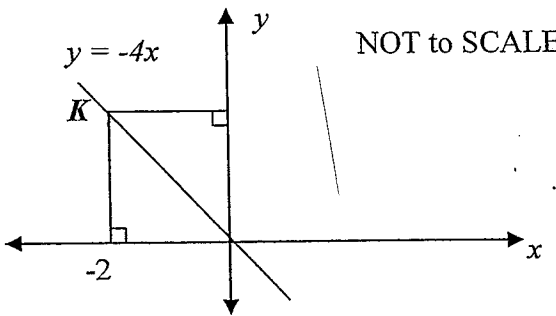
Non-Calculator Section

Time allowed: 30 minutes

INSTRUCTIONS:

- Attempt all questions.
- All questions are of equal value.
- Calculators are **NOT** permitted for this part of your examination.

QUESTIONS: Use this space for working	ANSWER ONLY
1. Simplify $13y - 3y \times 2$	
2. Which is larger $5\sqrt{3}$ or $3\sqrt{5}$?	
3. How many significant figures are there in the number 316 000 000 if it has been rounded to the nearest thousand?	
<p>4.</p>  <p>What is the value of $\cos \alpha$?</p>	
5. Solve $\sqrt{x} + \frac{1}{4} = 2$	
6. The area of a kite is 24cm^2 . If one of the diagonals is 4 cm, how long is the other diagonal?	
7. The area of a circle is found with the formula $A = \pi r^2$. The area of a circle of radius 27.5 cm is approximately 2375.829cm^2 . Find the area of a circle of radius 2.75cm, correct to 3 decimal places	
<p>8.</p>  <p>In the triangle, it is given that $\tan \theta = \frac{2}{3}$</p> <p>What is the value of x?</p>	

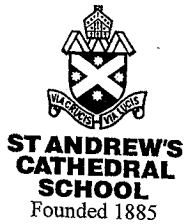
<p>9. Evaluate $(9.65 \times 10^6) - (5 \times 10^4)$</p>	
<p>10. Evaluate $8^{\frac{2}{3}}$</p>	
<p>11. If $(ax + b)^2 = 4x^2 + Mx + 9$, find M</p>	
<p>13. $1 \times 2 \times 3 \times 4 + 1 = 5^2$ $2 \times 3 \times 4 \times 5 + 1 = 11^2$ $3 \times 4 \times 5 \times 6 + 1 = 19^2$ $4 \times 5 \times 6 \times 7 + 1 = 29^2$</p> <p>Find the next line in the pattern</p>	
<p>14.</p>  <p>Find the coordinates of K</p>	
<p>15. A farmer is fencing a rectangular paddock $240m$ by $180m$. He puts a post in each corner and then a post every $2m$ along each boundary. How many posts does he need?</p>	
<p>16. When Nick washed a rectangular woollen blanket in water that was too hot, it shrank. The length of it shrank to half its original length and the width also shrank to half of its original width. If it used to be Xm^2, what is its area now?</p>	
<p>17. A mathematical operation $*$ is described as</p> $A * B = (A - B)(A + B)$ <p>Find the value of $3 * 2 * 4$</p>	

<p>18. $a = 1 + \frac{1}{1 + \frac{1}{b}}$, find b when $a = 3$</p>	
<p>19. At present John is x years old and his mother is three times as old as John. In two years time the sum of their ages will be 44. How old is his mother at present?</p>	
<p>20. When the Mathematician GAUSS was a young boy. He discovered a quick method for finding the sum of the numbers 1 to 100</p> <p>He realized that if</p> $K = 1 + 2 + 3 + \dots + 99 + 100$ <p>then $K = 100 + 99 + \dots + 3 + 2 + 1$</p> <p>He then quickly determined the value of K</p> <p>What is the value of K?</p>	

END OF NON-CALCULATOR EXAMINATION SEMESTER 2, 2008

Name: Shaun Por

Class: 9MAA



SEMESTER TWO EXAMINATION 2008

YEAR 9

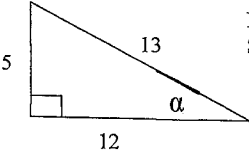
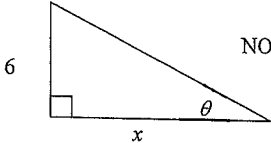
Stage 5.3 MATHEMATICS

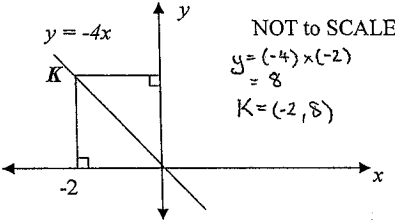

Non-Calculator Section

Time allowed: 30 minutes

INSTRUCTIONS:

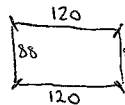
- Attempt all questions.
- All questions are of equal value.
- Calculators are **NOT** permitted for this part of your examination.

QUESTIONS: Use this space for working	ANSWER ONLY
1. Simplify $13y - 3y \times 2$ $= 13y - 6y$ $= 7y$	$7y$ ✓
2. Which is larger $5\sqrt{3}$ or $3\sqrt{5}$?	$3\sqrt{5}$ ✗
3. How many significant figures are there in the number 316 000 000 if it has been rounded to the nearest thousand?	6 ✓
4.  NOT to SCALE What is the value of $\cos \alpha$?	$\frac{12}{13}$ ✓
5. Solve $\sqrt{x} + \frac{1}{4} = 2$ $\sqrt{x} = 1\frac{3}{4}$ $x = (\frac{7}{4})^2$ $\sqrt{x} = \frac{7}{4}$ $= \frac{49}{16} = 3\frac{1}{16}$	$x = \frac{49}{16} = 3\frac{1}{16}$
6. The area of a kite is 24cm^2 . If one of the diagonals is 4 cm, how long is the other diagonal? $A = \frac{1}{2}xy$ $24\text{cm}^2 = \frac{1}{2} \times 4 \times y$ $24\text{cm}^2 = 2y$ $y = 12\text{cm}$	12 cm ✓
7. The area of a circle is found with the formula $A = \pi r^2$. The area of a circle of radius 27.5 cm is approximately 2375.829cm^2 . Find the area of a circle of radius 2.75cm, correct to 3 decimal places	23.758 ✓ cm^2
8.  NOT to SCALE $\tan \theta = \frac{2}{3}$ In the triangle, it is given that $\tan \theta = \frac{2}{3}$ What is the value of x ?	$x = 9$ ✓

9. Evaluate $(9.65 \times 10^6) - (5 \times 10^4) = 9650000 - 50000 = 9600000 = 9.6 \times 10^6$	$9600000 = 9.6 \times 10^6$ ✓
10. Evaluate $8^{-\frac{2}{3}} \quad 8^{-\frac{2}{3}} = \frac{1}{8^{\frac{2}{3}}} = \frac{1}{\sqrt[3]{8^2}} = \frac{1}{2^2} = \frac{1}{4}$	$\frac{1}{4}$ ✓
11. If $(ax+b)^2 = 4x^2 + Mx + 9$, find M $(2x+3)^2 = 4x^2 + 12x + 9$	$M = 12$ ✓
13. $1 \times 2 \times 3 \times 4 + 1 = 5^2$ $2 \times 3 \times 4 \times 5 + 1 = 11^2$ $3 \times 4 \times 5 \times 6 + 1 = 19^2$ $4 \times 5 \times 6 \times 7 + 1 = 29^2$ $5 \times 6 \times 7 \times 8 + 1 = 41^2$ Find the next line in the pattern	$5 \times 6 \times 7 \times 8 + 1 = 41^2$ ✓
14.  Find the coordinates of K	$K = (-2, 8)$ ✓
15. A farmer is fencing a rectangular paddock 240m by 180m. He puts a post in each corner and then a post every 2m along each boundary. How many posts does he need? $120 + 120 + (90-2) + (90-2) = 120 + 120 + 88 + 88 = 416$	416 posts. ✓
16. When Nick washed a rectangular woollen blanket in water that was too hot, it shrank. The length of it shrank to half its original length and the width also shrank to half of its original width. If it used to be Xm^2 , what is its area now?  $A = \frac{1}{4} X m^2$	$A = \frac{1}{4} X m^2$ $= \frac{X}{4} m^2$ ✓
17. A mathematical operation $*$ is described as $A*B = (A-B)(A+B)$ Find the value of $3*2*4$	$3*2 = (3-2)(2+3) = 1 \times 5 = 5$ $5*4 = (5-4)(4+5) = 1 \times 9 = 9$ $\therefore 3*2*4 = 9$ ✓

18. $a = 1 + \frac{1}{b}$, find b when $a = 3$ $1 + \frac{1}{b} = 3 \quad 2 = \frac{1}{1+b} \quad 2 + \frac{2}{b} = 1 \quad b = -2$ $3 = 1 + \frac{1}{1+b} \quad 2(1+\frac{1}{b}) = 1 \quad \frac{2}{b} = -1 \quad 2 = -b$	$b = -2$ ✓
19. At present John is x years old and his mother is three times as old as John. In two years time the sum of their ages will be 44. How old is his mother at present? $(x+2) + (3x+2) = 44 \quad 4x+4 = 44 \quad 4x = 40 \quad x = 10 \quad J = 10 \quad M = 30$	30 years old. ✓
20. When the Mathematician GAUSS was a young boy. He discovered a quick method for finding the sum of the numbers 1 to 100 He realized that if $K = 1 + 2 + 3 + \dots + 99 + 100$ then $K = 100 + 99 + \dots + 3 + 2 + 1$ He then quickly determined the value of K What is the value of K ? $K = 101 \times 50 = 5050$	$K = 5050$ ✓

END OF NON-CALCULATOR EXAMINATION SEMESTER 2, 2008



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