

Briefcase Fun

The purpose of each of these six activities is threefold: to hone student's skills with the graphic calculator, to offer practice with General Mathematics revision questions and to achieve all of this in a fun way. These activities are based on the current (2008) NSW General Mathematics Courses.

Equipment required:

- A briefcase with two, three-number combination locks is an ideal, yet not an essential companion to these activities. If you do not have a briefcase you can simply use a box that you refer to as 'the briefcase'.
- A suitable prize.

How to administer 'Briefcase Fun':

- Choose an appropriate activity sheet (refer to the contents list below). It is essential that most students are competent with the skills required by all 6 questions on the chosen activity sheet.
- Place the prize inside the combination-lock briefcase and set the lock to the combination number according to the solution sheet. If not using a briefcase simply place prize in the box.
- Divide the class into groups of 2 to 3 students.
- Give each group the same activity sheet.
- Groups are to work through the six questions on the sheet and write their single digit solutions into the appropriate answer spaces.
- When a group thinks they have all answers correct they bring their sheet to you.
- Test the numbers on the briefcase. If both locks open then the prize is theirs! OR, if just using a box, check their numbers against the solution sheet.
- If their solution does not match the combination do not give any indication as to which of the six numbers is incorrect.
- This activity can create a very high level of engagement and motivation within a class.

NOTE: If you desire to modify this activity and therefore desire the original word document you may request it by emailing casio.edusupport@shriro.com.au

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- Scale, gradient
- Trigonometry
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Graphic Calculator Briefcase Questions-1 HSC General

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- Probability
- RUN, TVM

Graphic Calculator Briefcase Questions-2 HSC General

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- Probability
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- Proportion
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- EQUA, STAT, TVM

Graphic Calculator Briefcase Questions-3 HSC General

- Financial maths
- Graphing
- Trigonometry
- Combinations
- GRAPH, RUN, TVM

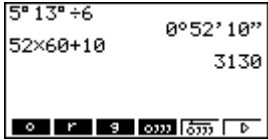
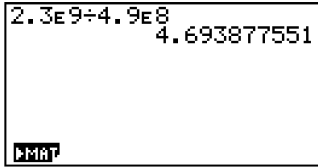

Graphic Calculator Briefcase Questions-1 Prelim General Name: _____

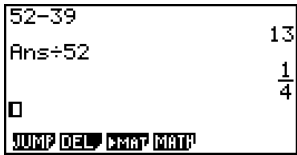
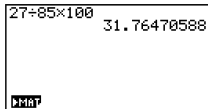
- Your task is to open the briefcase.
- You will need to find the 6 numbers that are the combinations to the two locks.
- Answer the six questions and you will find the correct numbers and their correct order.

1st number	2nd number	3rd number
<p>At Wanganella High School there are 5hrs 13 min of teaching time each day. If there are to be six lessons each day of equal length, how many seconds will each lesson be?</p> <p>To get the briefcase number add the digits in your answer.</p>	<p>Calculate the following: $2.3 \times 10^9 \div 4.9 \times 10^8$ Write your answer to 4 significant figures.</p> <p>The briefcase number is the least significant of the four significant figures.</p>	<p>A cylinder has a height of 1.2m. Its volume is 7 cubic metres. Calculate the radius of the cylinder to 1 significant figure.</p> <p>The briefcase number is the radius of the cylinder to 1 significant figure.</p>
The first number is:	The second number is:	The third number is:

4th number	5th number	6th number
<p>Find the discount as a percentage of the original price if the sale price of a double DVD is \$39 reduced from \$52. Convert this percentage to a fraction in simplest form.</p> <p>The briefcase number is the denominator of this fraction.</p>	<p>Find the first quartile of the following data set: 9, 5, 58, 23, 2, 77</p> <p>The first quartile is the briefcase number.</p>	<p>The sale price of a shirt is \$27. The shirt is discounted 15%. Calculate the original price.</p> <p>The briefcase number is the third most significant digit in the answer.</p>
The fourth number is:	The fifth number is:	The sixth number is:

Graphic Calculator Briefcase Questions-1 Prelim General SOLUTIONS

1 st number	2 nd number	3 rd number
 <p>ANS = 7</p>	 <p>ANS = 4</p>	 <p>ANS = 1</p>
<p>The first number is: 7</p>	<p>The second number is: 4</p>	<p>The third number is: 1</p>

4 th number	5 th number	6 th number
 <p>ANS = 3</p>	<p>ANS = 5</p>	 <p>ANS = 7</p>
<p>The fourth number is: 4</p>	<p>The fifth number is: 5</p>	<p>The sixth number is: 7</p>

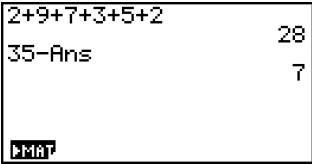
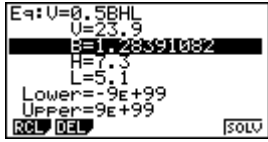
Graphic Calculator Briefcase Questions-2 Prelim General Name: _____

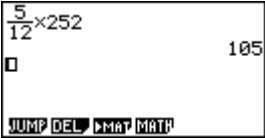
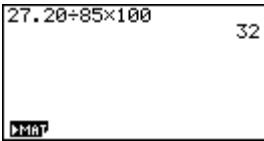

- Your task is to open the briefcase.
- You will need to find the 6 numbers that are the combinations to the two locks.
- Answer the six questions and you will find the correct numbers and their correct order.

1st number	2nd number	3rd number
<p>Here are 6 scores: 2 9 7 3 5 2 When a 7th score is added the mean of the seven numbers is 5.</p> <p>The briefcase number is the 7th number.</p>	<p>Consider the following data set: 12, 23, 7, 3, 15, 12, 9, 16, 11</p> <p>The briefcase number is the standard deviation, to 1 significant figure.</p>	<p>A triangular prism is 7.3cm high, 5.1cm long and has a volume of 23.9 cubic cm. Find the length of its base, in cm, to 3 significant figures.</p> <p>The briefcase number is the least significant of the 3 digits in the correct answer.</p>
The first number is:	The second number is:	The third number is:

4th number	5th number	6th number
<p>Marbles are in a container in the following ratio Blue : Red : Black = 2 : 3 : 7 There are 252 marbles in total. How many are not black?</p> <p>To get the briefcase number add the digits in the answer.</p>	<p>Find the original price of a shirt discounted by 15% if the sale price is \$27.20</p> <p>The briefcase number is the most significant of the 2 digits in your answer.</p>	<p>A parallelogram has an area of 26.8 square cm. The height of the parallelogram is 7.8 cm. Calculate the length of its base to 3 significant figures.</p> <p>The briefcase number is the least significant of these figures.</p>
The fourth number is:	The fifth number is:	The sixth number is:

Graphic Calculator Briefcase Questions-2 Prelim General SOLUTIONS

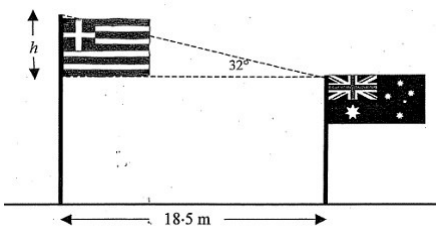
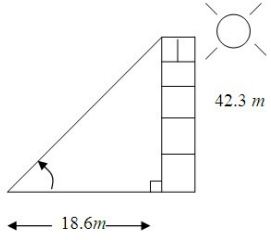
1 st number	2 nd number	3 rd number
 <p>ANS = 7</p>	<p>ANS = 5</p>	 <p>ANS = 8</p>
<p>The first number is: 7</p>	<p>The second number is: 5</p>	<p>The third number is: 8</p>

4 th number	5 th number	6 th number
 <p>ANS: 1 + 0 + 5 = 6</p>	<p>\$27.20 is 85% of the original price</p>  <p>ANS = 3</p>	 <p>Base=3.44</p> <p>ANS = 4</p>
<p>The fourth number is: 6</p>	<p>The fifth number is: 3</p>	<p>The sixth number is: 4</p>

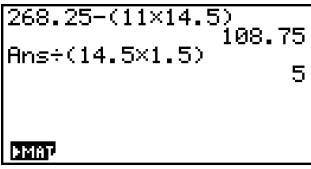
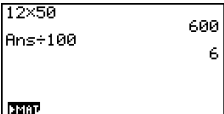
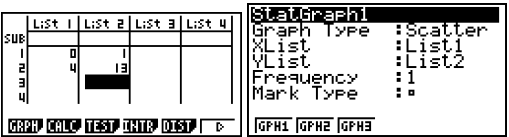
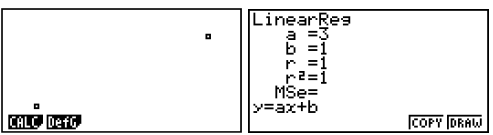
Graphic Calculator Briefcase Questions-3 Prelim General Name: _____

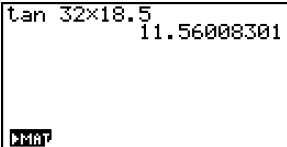
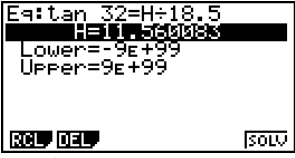
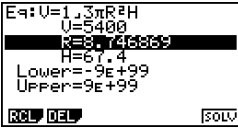
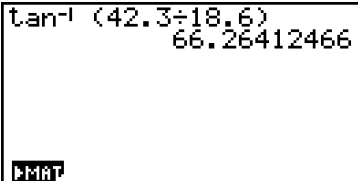
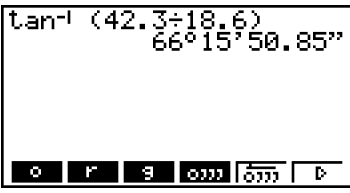
- Your task is to open the briefcase.
- You will need to find the 6 numbers that are the combinations to the two locks.
- Answer the six questions and you will find the correct numbers and their correct order.

1st number	2nd number	3rd number
<p>You earned \$268.25 last week. Your normal hourly rate is \$14.50 per hour. The Saturday rate is time and a half. You worked 11 hours at the normal rate.</p> <p>The briefcase number is the number of hours you worked at the Saturday rate.</p>	<p>A house plan has the length of the lounge as 12cm. The scale of the plan is 1:50. What is the actual length of the lounge in metres?</p> <p>This is your briefcase number.</p>	<p>Find the gradient of the straight-line which passes through the following two points: (0,1) and (4,13).</p> <p>The briefcase number is the gradient.</p>
The first number is:	The second number is:	The third number is:

4th number	5th number	6th number
<p>Find the vertical height (h) of the Greek flag below to 3 significant figures.</p>  <p>The briefcase number is the least significant of the 3 significant figures.</p>	<p>Calculate the radius of a cone with a volume of 5400 cubic cm and a height of 67.4 cm.</p> <p>The briefcase number is the answer in cm to 1 significant figure.</p>	<p>Late in the afternoon a building of height 42.3m casts a shadow 18.6m long. Calculate the angle of elevation of the sun. The answer is 66° and a certain number of minutes (to the nearest minute).</p> <p>The briefcase number is the number of minutes (to the nearest minute, after 66°) divided by 4.</p> 
The fourth number is:	The fifth number is:	The sixth number is:

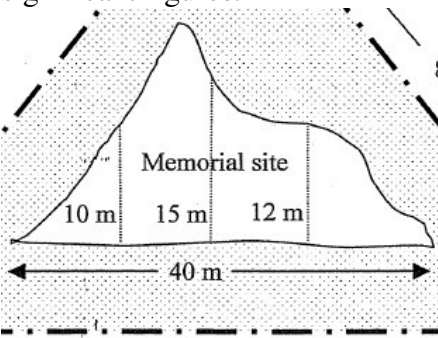
Graphic Calculator Briefcase Questions-3 Prelim General SOLUTIONS

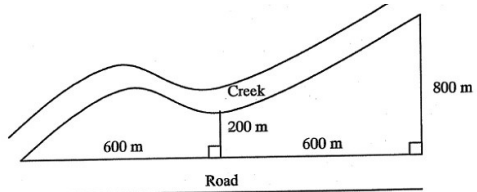
1 st number	2 nd number	3 rd number
<p>Top Line: Total earned minus normal hours = Saturday earnings:</p> <p>2nd Line: Saturday earnings minus Saturday rate = Saturday hours:</p>  <p>ANS = 5</p>	 <p>ANS = 6</p>	  <p>ANS = 3</p>
<p align="center">The first number is:</p> <p align="center">5</p>	<p align="center">The second number is:</p> <p align="center">6</p>	<p align="center">The third number is:</p> <p align="center">3</p>

4 th number	5 th number	6 th number
 <p>OR</p>  <p>(11.6m)</p> <p>ANS = 6</p>	 <p>ANS = 9</p>	  <p>ANS = 16 ÷ 4 = 4</p>
<p align="center">The fourth number is:</p> <p align="center">6</p>	<p align="center">The fifth number is:</p> <p align="center">9</p>	<p align="center">The sixth number is:</p> <p align="center">4</p>

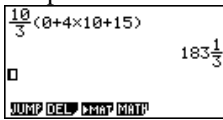
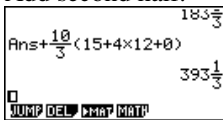
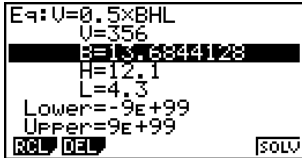
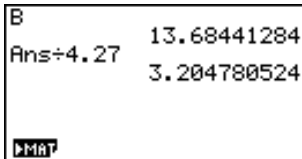
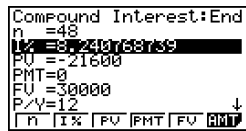
Graphic Calculator Briefcase Questions-1 HSC General Name: _____

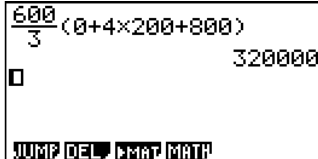
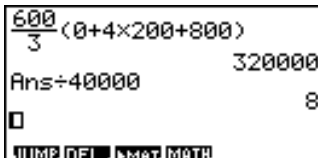
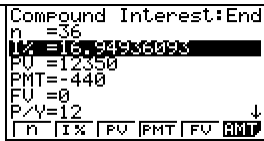

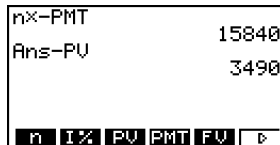
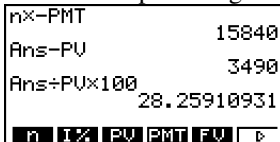
- Your task is to open the briefcase.
- You will need to find the 6 numbers that are the combinations to the two locks.
- Answer the six questions and you will find the correct numbers and their correct order.

1 st number	2 nd number	3 rd number
<p>Calculate an approximation of the area shown using Simpson's Rule to 2 significant figures.</p>  <p>The briefcase number is the area to 2 significant figures divided by 130.</p>	<p>A triangular prism with a volume of 356 cubic cm is 4.3cm long and 12.1cm high. Find the length of its base, in cm.</p> <p>The briefcase answer is the length of your base divided by 4.27, to 1 sig fig.</p>	<p>What is the compounding interest rate required to 'grow' \$21 600 to \$30 000 if it compounds monthly over 4 years?</p> <p>The briefcase number is the compounding interest rate to 1 significant figure.</p>
<p>The first number is:</p>	<p>The second number is:</p>	<p>The third number is:</p>

4 th number	5 th number	6 th number
<p>Between the creek and the road lies some farm land. Using Simpson's Rule calculate an estimate of the area of this land to 2 significant figures.</p> <p>The briefcase number is the correct 2 significant figure answer divided by 40 000.</p> 	<p>A loan of \$12 350 is paid off in equal monthly installments of \$440 over 3 years. Firstly calculate the monthly compounding interest rate. Then, by transferring the relevant TVM values into RUN mode, calculate the total amount of interest paid as a percentage of the loan amount, to 2 significant figures. The briefcase number is the above percentage, to 2 sig figs, divided by 4.</p>	<p>You roll 2 dice and add the 2 numbers. Calculate the probability, as a fraction in simplest form, of scoring a 9 when two dice are rolled once.</p> <p>The briefcase number is the denominator.</p>
<p>The fourth number is:</p>	<p>The fifth number is:</p>	<p>The sixth number is:</p>

Graphic Calculator Briefcase Questions-1 HSC General SOLUTIONS

1 st number	2 nd number	3 rd number
<p>Simpson's Rule for first half:</p>  <p>Add second half:</p>  <p>Area to 2sf = 390 ANS: 390 ÷ 130 = 3</p>	  <p>ANS = 3</p>	 <p>ANS = 8</p>
<p>The first number is:</p> <p>3</p>	<p>The second number is:</p> <p>3</p>	<p>The third number is:</p> <p>8</p>

4 th number	5 th number	6 th number
 	<p>Calculating interest:</p>   <p>Total payments:</p>  <p>Total interest paid:</p>  <p>ANS: 28 ÷ 4 = 7</p>	<p>Four ways to score 9 (6-3, 5-4, 4-5, 3-6) 36 possible outcomes. Probability of scoring a 9 $= \frac{4}{36} = \frac{1}{9}$</p> <p>ANS = 9</p>
<p>The fourth number is:</p> <p>8</p>	<p>The fifth number is:</p> <p>7</p>	<p>The sixth number is:</p> <p>9</p>

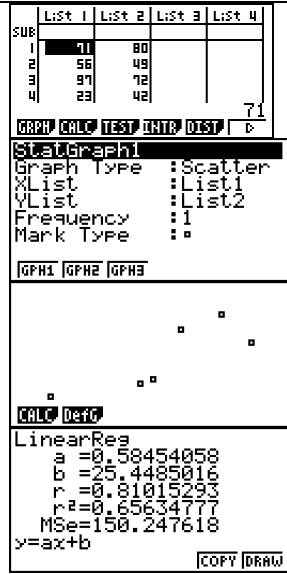
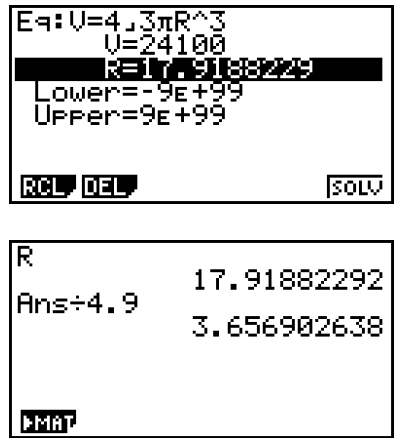
Graphic Calculator Briefcase Questions-2 HSC General Name: _____

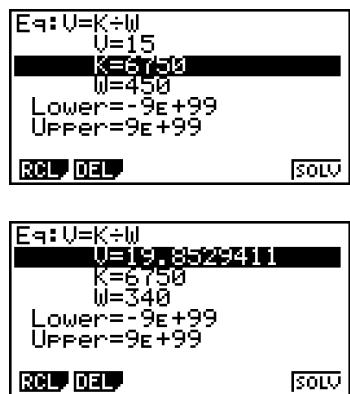
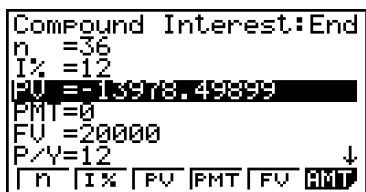
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- You will need to find the 6 numbers that are the combinations to the two locks.
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1st number	2nd number	3rd number																					
<p>In the table below are the Mathematics and English Mid Year Exam scores of 6 students</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">NAME</th> <th style="text-align: center;">MATHS</th> <th style="text-align: center;">ENGLISH</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Ernie</td> <td style="text-align: center;">71</td> <td style="text-align: center;">80</td> </tr> <tr> <td style="text-align: center;">Bethel</td> <td style="text-align: center;">56</td> <td style="text-align: center;">49</td> </tr> <tr> <td style="text-align: center;">Guiseppe</td> <td style="text-align: center;">97</td> <td style="text-align: center;">72</td> </tr> <tr> <td style="text-align: center;">Bart</td> <td style="text-align: center;">23</td> <td style="text-align: center;">42</td> </tr> <tr> <td style="text-align: center;">Running Bear</td> <td style="text-align: center;">86</td> <td style="text-align: center;">88</td> </tr> <tr> <td style="text-align: center;">Gudinski</td> <td style="text-align: center;">61</td> <td style="text-align: center;">52</td> </tr> </tbody> </table> <p>Investigate these scores to determine whether they correlate. (ie did the students who performed well in Maths tend to also perform well in English, and vice versa?)</p> <p>To find the briefcase number determine the correlating coefficient to 1 significant figure, and multiply this number by 10.</p>	NAME	MATHS	ENGLISH	Ernie	71	80	Bethel	56	49	Guiseppe	97	72	Bart	23	42	Running Bear	86	88	Gudinski	61	52	<p>You toss a coin and roll a die. Calculate the probability, as a fraction in simplest form, of getting a tail and an even number.</p> <p>The briefcase number is the denominator.</p>	<p>A sphere has a volume of 24100 cubic cm. Find its radius.</p> <p>To get the briefcase number divide the radius by 4.9 and round the answer to 1 significant figure.</p>
NAME	MATHS	ENGLISH																					
Ernie	71	80																					
Bethel	56	49																					
Guiseppe	97	72																					
Bart	23	42																					
Running Bear	86	88																					
Gudinski	61	52																					
The first number is:	The second number is:	The third number is:																					

4th number	5th number	6th number
<p>The speed (v) in km/h of a ski lift travelling up an incline is inversely proportional to the weight (W), in kg, it carries. A ski lift carrying a weight of 450 kg can move up the incline at 15 km/hr. Calculate the speed of the lift to 2 significant figures if the weight carried by the lift drops to 340 kg.</p> <p>To get the briefcase number divide the speed (to 2 significant figures) by 4.</p>	<p>You roll 2 dice and add the 2 numbers. Calculate the probability, as a fraction in simplest form, of scoring an 8 when two dice are rolled once.</p> <p>The briefcase number is the numerator of your answer.</p>	<p>How much money needs to be deposited to grow to \$20 000 if it earns 12% interest pa compounding monthly for 3 years. Round your answer to the nearest dollar.</p> <p>The briefcase number is the digit in the units position of your answer.</p>
The fourth number is:	The fifth number is:	The sixth number is:

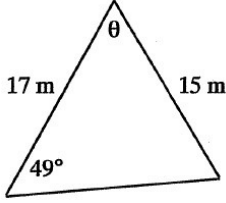
Graphic Calculator Briefcase Questions-2 HSC General SOLUTIONS

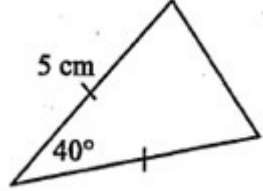
1 st number	2 nd number	3 rd number
 <p>ANS = 8</p>	<p> $P(\text{Tail}) = \frac{1}{2}$ $P(\text{Even Number}) = \frac{1}{2}$ $P(\text{T and Even}) = \frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ </p> <p>ANS = 4</p>	 <p>ANS = 4</p>
<p>The first number is:</p> <p>8</p>	<p>The second number is:</p> <p>4</p>	<p>The third number is:</p> <p>4</p>

4 th number	5 th number	6 th number
 <p>V = 20. ANS=20 ÷ 4 = 5</p>	<p>Five ways to score 8: (6-2, 5-3, 4-4, 3-5, 2-6)</p> <p>36 possible outcomes.</p> <p>Probability of scoring an 8 = $\frac{5}{36}$</p> <p>ANS = 5</p>	 <p>ANS = 8</p>
<p>The fourth number is:</p> <p>5</p>	<p>The fifth number is:</p> <p>5</p>	<p>The sixth number is:</p> <p>8</p>


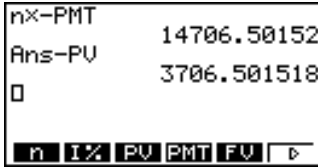
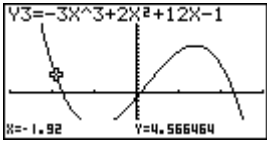
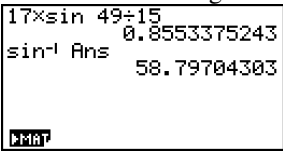
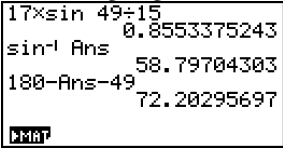
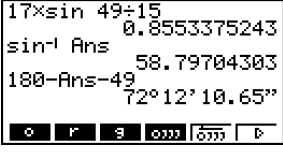
Graphic Calculator Briefcase Questions-3 HSC General Name: _____

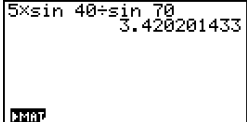
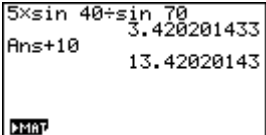

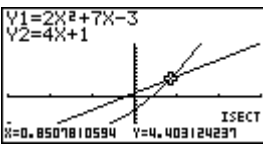
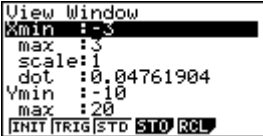
- Your task is to open the briefcase.
- You will need to find the 6 numbers that are the combinations to the two locks.
- Answer the six questions and you will find the correct numbers and their correct order.

1st number	2nd number	3rd number
<p>Tom took out an \$11 000 loan for a home media centre. Tom was to pay the loan off in weekly payments over 5 years. The compounding interest rate of the loan was 12.2% pa.</p> <p>Firstly calculate the weekly payment amount. Then, by transferring the relevant numbers into RUN mode calculate the total amount of interest paid to 4 significant figures.</p> <p>Your briefcase number is the least significant of these 4 figures.</p>	<p>Sketch the graph of $y = -3x^3 + 2x^2 + 12x - 1$.</p> <p>The briefcase answer for this question is the Y coordinate, to 1 significant figure, when $X = -1.92$</p>	<p>Find the value of θ to the nearest minute. The answer is 72° and a certain number of minutes (to the nearest minute).</p>  <p>The briefcase number is the number of minutes (after 72°) divided by 4.</p>
The first number is:	The second number is:	The third number is:

4th number	5th number	6th number
<p>Calculate the perimeter of this triangle to 3 significant figures.</p>  <p>The briefcase number is the least significant of the 3 digits.</p>	<p>How many ways can a committee of 3 people be chosen from 7 people?</p> <p>The briefcase number is the difference between the digits of the correct answer.</p>	<p>Find the intersection points between the following two graphs: $y = 2x^2 + 7x - 3$ and $y = 4x + 1$. For your axes use X: -3 to 3 and Y: -10 to 20. Find the intersection point which has a positive X coordinate.</p> <p>The briefcase answer is the Y coordinate of this point, to 1 significant figure.</p>
The fourth number is:	The fifth number is:	The sixth number is:

Graphic Calculator Briefcase Questions-3 HSC General SOLUTIONS

1 st number	2 nd number	3 rd number
  <p>Interest to 4 sig figs is \$3707</p> <p>Least sig fig = 7</p>	 <p>Y Coord to 1sf = 5</p>	<p>To find the third angle:</p>  <p>subtracting angles from 180°:</p>  <p>Converting to minutes:</p>  <p>ANS: 12 ÷ 4 = 3</p>
<p>The first number is:</p> <p>7</p>	<p>The second number is:</p> <p>5</p>	<p>The third number is:</p> <p>3</p>

4 th number	5 th number	6 th number
<p>Base angles are each 70°</p>  <p>Length of third side:</p>  <p>Perimeter:</p> <p>ANS = 4</p>	 <p>ANS = 2</p>	  <p>ANS = 4</p>
<p>The fourth number is:</p> <p>4</p>	<p>The fifth number is:</p> <p>2</p>	<p>The sixth number is:</p> <p>4</p>