CATHOLIC SECONDARY SCHOOLS
ASSOCIATION OF NEW SOUTH WALES

2008

TRIAL HIGHER SCHOOL CERTIFICATE EXAMINATION

General Mathematics

Morning Session
Monday 11 August 2008

General Instructions

- Reading time – 5 minutes
- Working time – 2½ hours
- Write using blue or black pen
- Calculators may be used
- Use Multiple Choice Answer Sheet provided
- A separate Formula Sheet is provided
- Write your Centre Number and Student Number at the top of this page

Total marks – 100

Section I
Pages 2–10

22 marks
- Attempt Questions 1–22
- Allow about 30 minutes for this section

Section II
Pages 11–20

78 marks
- Attempt Questions 23–28
- Allow about 2 hours for this section

3001-1

Section I

22 marks
Attempt Questions 1–22
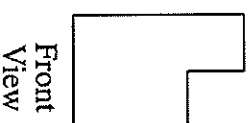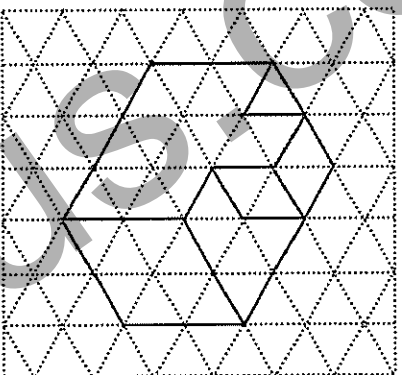**Allow about 30 minutes for this section**

Use the multiple-choice answer sheet.

1   In scientific notation, which of the following is closest to 0.000 000 456 732?

(A) 4.5×10^{-7}

(B) 4.6×10^{-7}

(C) 4.5×10^{7}

(D) 4.6×10^{7}

2   Francesca's bank account has a \$5 monthly fee plus an excess transaction fee of 60 cents for every transaction above the free limit of 20 per month. How much does Francesca pay in fees in a month in which Francesca makes 32 transactions?

(A) \$7.20

(B) \$12.20

(C) \$19.20

(D) \$24.20

3   Which expression is equivalent to $3m(m-4) + 6(m-2)$?

(A) $3m^2 - 6m - 12$

(B) $3m^2 + 6m - 6$

(C) $3m^2 - m - 8$

(D) $9m - 6$

4 The McAlister Pastoral Company records the amount of rain in their rain gauge each morning. Which of the following terms describes the type of data collected?
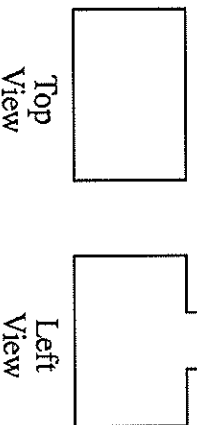
(A) Categorical

(B) Continuous

(C) Discrete
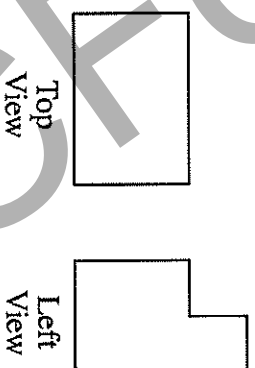
(D) Stratified

5

Front View

The diagram above shows the 3-dimensional representation of a solid figure on an isometric grid, and the 2-dimensional view of the front of the solid. Which of the following gives correct 2-dimensional views of the top and the left of the solid?
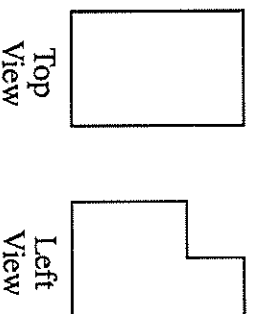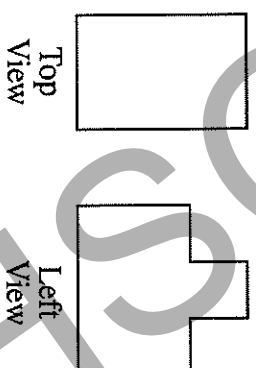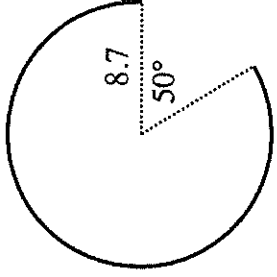
(A)

Top View

Left View

(B)

Top View

Left View

(C)

Top View

Left View

(D)

Top View

Left View

The diagram above shows a circle of radius 8.7 cm. A sector of angle 50° has been cut from the circle. Which of the following expressions gives the length of the circular arc which remains?

(A) $\dfrac{50}{360} \times \pi \times 8.7^2$

(B) $\dfrac{50}{360} \times 2 \times \pi \times 8.7$

(C) $\dfrac{310}{360} \times \pi \times 8.7^2$

(D) $\dfrac{310}{360} \times 2 \times \pi \times 8.7$

7   An archer hits a bulls-eye in one out of every six shots. Today he is planning on shooting 300 arrows. How many of these would he expect to hit the bulls-eye?

(A) 6

(B) 18

(C) 50

(D) 60

8   An external hard drive has a marked price of $599. During the January sales it sold for $329. What is the percentage discount on this item?

(A) 18%

(B) 45%

(C) 55%

(D) 82%

9 Marina visited France on her holiday. She paid 240 euros for a pair of shoes. This price included a value added tax (VAT) of 20%. When she left France she received a refund of the VAT. What was Marina's refund?

(A) 40 euros

(B) 48 euros

(C) 192 euros

(D) 200 euros

10 Emma has completed four assessment tasks, each marked out of 100, giving her a mean of 71%. She wants to increase her mean to 75% after her next assessment task. Which of the following will calculate the mark (x) she needs to achieve in her next assessment task?

(A) $x = \dfrac{71 + 75}{2}$

(B) $\dfrac{71 + x}{2} = 75$

(C) $\dfrac{71 \times 4 + x}{2} = 75$

(D) $\dfrac{71 \times 4 + x}{5} = 75$

11 Jeremiah has 6500 shares with a current market value of $2.95 per share. Jeremiah has received a total dividend of $1093.30. What is the dividend yield on these shares?

(A) 0.057%

(B) 0.27%

(C) 5.7%

(D) 27%

12 The following table shows monthly repayments for loans of various amounts over 30 years at different rates of interest.
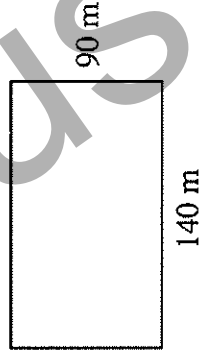
Monthly Repayments on a 30 year Loan

Interest rate per period	Loan amount			
	$150 000	$200 000	$250 000	$300 000
6.75%	$972.90	$1297.20	$1621.50	$1945.79
7.00%	$997.95	$1330.60	$1663.26	$1995.91
7.25%	$1023.26	$1364.35	$1705.44	$2046.53
7.50%	$1048.82	$1398.43	$1748.04	$2097.64
7.75%	$1074.62	$1432.82	$1791.03	$2149.24
8.00%	$1100.65	$1467.53	$1834.41	$2201.29

Hamish borrows $250 000 over a period of 30 years at 7.25% p.a. How much interest would Hamish pay over 30 years?

(A) $1705.44

(B) $51 163.20

(C) $363 958.40
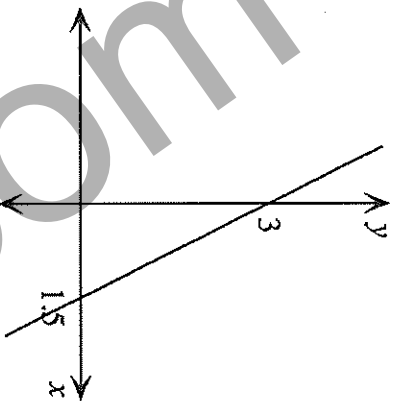
(D) $613 958.40

13

140 m

90 m

The diagram above shows the dimensions of a playing field. The lengths are given correct to the nearest 10 metres. What is the maximum possible area of the playing field?
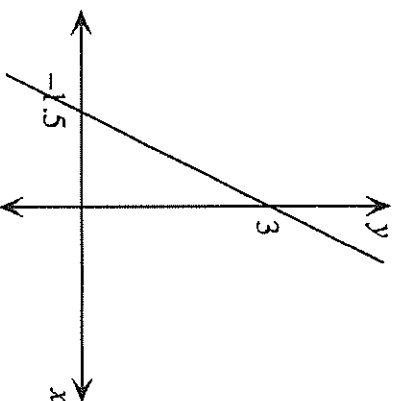
(A) 11 475 m^2

(B) 12 600 m^2

(C) 13 775 m^2

(D) 15 000 m^2

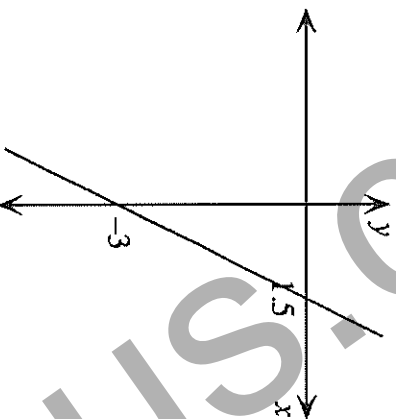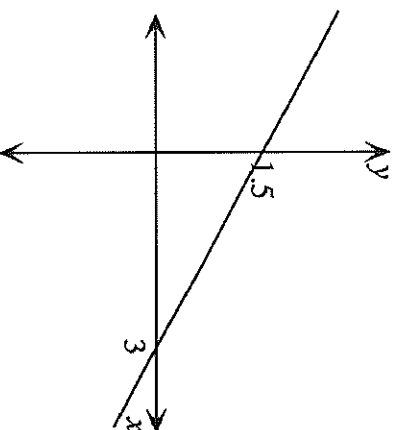**14** Which of the following could be the graph of $y = 3 - 2x^2$?

(A)

(B)

(C)

(D)

15 John observes that the number of messages (M) that he receives on his Myspace page each day is directly proportional to the square of the number of friends (n) he has on that day. Yesterday he had 10 friends and received 40 messages. How many messages would he receive if he had 45 friends?

(A) 13

(B) 85

(C) 180

(D) 810
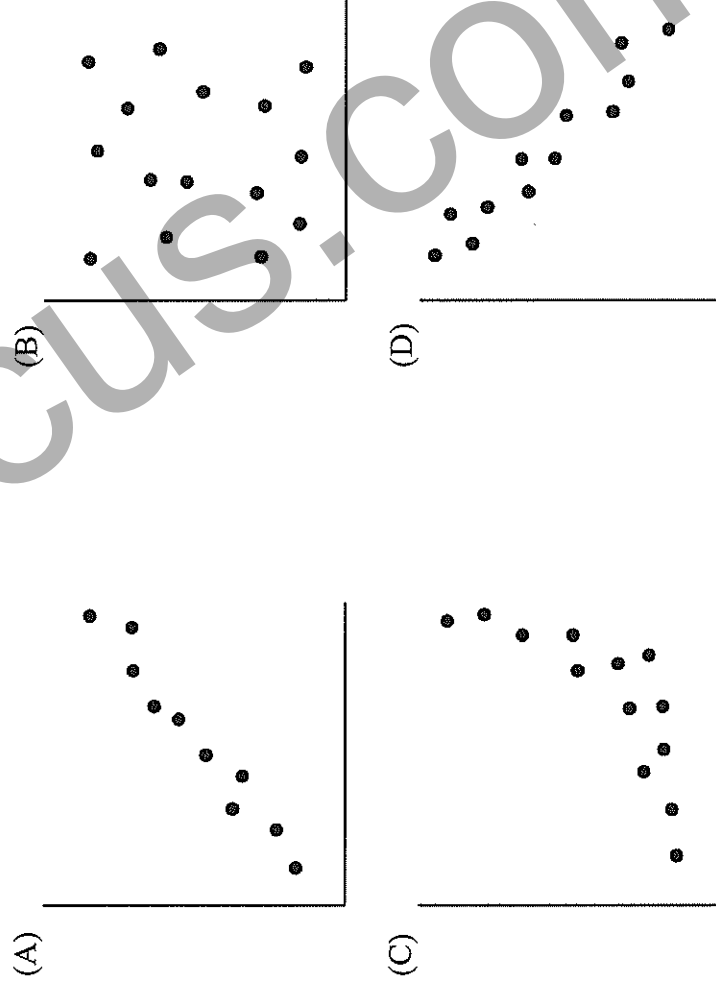
Stem	Leaf
2	4
3	
4	
5	3 3 3 8 8 9 9
6	0 2 2
7	3 3
8	4 5 6
9	0 1 3 4 5 6

Which of the following measures will change if the outlier is ignored?

(A) Mean

(B) Median

(C) Mode

(D) Interquartile range

17 Which of the scatter plots below is most likely to have the highest correlation coefficient?

(A)

(B)

(C)

(D)

18 On a TV game show there are five contestants. Two are to be chosen at random. The first contestant chosen will win a car. The other will win a years supply of toothpaste. In how many ways can the two winners be chosen?

(A) 10

(B) 20

(C) 25

(D) 40

19 Rebecca needs $600 per month for 5 years while she studies at university. What amount of money do her parents need to invest now at 7.5% p.a., compounding monthly to provide the money that Rebecca needs?

(A) $2427.53

(B) $3485.03

(C) $29 943.18

(D) $43 516.26

20 θ is an obtuse angle and $\sin\theta = 0.8183$. What is the size of θ, correct to the nearest degree?

(A) 55°

(B) 125°

(C) 145°

(D) 235°

21 Hockey and tennis are the only sports offered at a local high school. 65% of students play tennis and 18% play hockey **and** tennis. 15% of students do not play any sport. A student is selected at random. What is the probability that the student does **not** play hockey?

(A) 15%

(B) 38%

(C) 47%

(D) 62%

22 The two-way table below shows the results of a test of a new lie detector.

	Detector Result: Told the truth	Detector Result: Lied	Total
Accurate Result	154	96	250
Inaccurate Result	21	12	33
Total	175	108	283

What percentage of people who did tell the truth were told that they lied?

(A) 4.2%

(B) 7.2%

(C) 9.3%

(D) 36.4%