AUSTRALIAN MATHEMATICS COMPETITION

AN ACTIVITY OF THE AUSTRALIAN MATHEMATICS TRUST

THURSDAY 31 JULY 2008

MIDDLE PRIMARY DIVISION COMPETITION PAPER

AUSTRALIAN SCHOOL YEARS 3 AND 4
TIME ALLOWED: 60 MINUTES

INSTRUCTIONS AND INFORMATION

GENERAL

1. Do not open the booklet until told to do so by your teacher.
2. You may use any teaching aids normally available in your classroom, such as MAB blocks, counters, currency, calculators, play money etc. You are allowed to work on scrap paper and teachers may explain the meaning of words in the paper.
3. Diagrams are NOT drawn to scale. They are intended only as aids.
4. There are 25 multiple-choice questions, each with 5 possible answers given and 5 questions that require a whole number between 0 and 999. The questions generally get harder as you work through the paper. There is no penalty for an incorrect response.
5. This is a competition not a test; do not expect to answer all questions. You are only competing against your own year in your own State or Region so different years doing the same paper are not compared.
6. Read the instructions on the **Answer Sheet** carefully. Ensure your name, school name and school year are filled in. It is your responsibility that the Answer Sheet is correctly coded.
7. When your teacher gives the signal, begin working on the problems.

THE ANSWER SHEET

1. Use only lead pencil.
2. Record your answers on the reverse of the Answer Sheet (not on the question paper) by FULLY colouring the circle matching your answer.
3. Your Answer Sheet will be read by a machine. The machine will see all markings even if they are in the wrong places, so please be careful not to doodle or write anything extra on the Answer Sheet. If you want to change an answer or remove any marks, use a plastic eraser and be sure to remove all marks and smudges.

INTEGRITY OF THE COMPETITION

The AMC reserves the right to re-examine students before deciding whether to grant official status to their score.

Middle Primary Division

Questions 1 to 10, 3 marks each

1. Which number is one hundred more than the number 765?

(A) 865 (B) 985 (C) 876 (D) 775 (E) 766

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2. What time is shown on the clock below?

(A) 8:00 (B) 9:30 (C) 6:30 (D) 8:30 (E) 8:40

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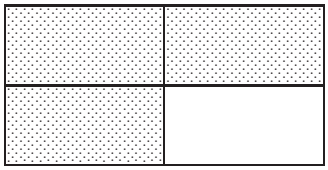
3. What fraction of the diagram below has been shaded ?



(A) $\frac{1}{3}$ (B) $\frac{4}{3}$ (C) $\frac{3}{4}$ (D) $\frac{1}{4}$ (E) $\frac{3}{1}$

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4. Wendy has 20 marbles. She has five times as many marbles as Jim. How many marbles does Jim have?

(A) 4 (B) 100 (C) 5 (D) 25 (E) 15

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5. A string of coloured beads begins with a red, then a green, then a blue, then a yellow. This pattern is repeated many times. What colour is the 26th bead?

(A) red (B) green (C) blue (D) yellow (E) white

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6. On Sue's 5th birthday, her brother Joe was 8 years old. How old will Joe be on Sue's 10th birthday?

(A) 16 (B) 15 (C) 13 (D) 12 (E) 11

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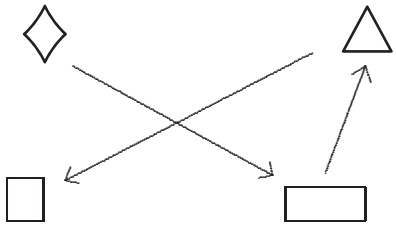
7. In the diagram, the arrow '⟶' means 'is half of'. For example, '▭ ⟶ △' means '▭ is half of △',



If ◇ is 8, what is ▭?

(A) 2 (B) 32 (C) 4 (D) 16 (E) 64

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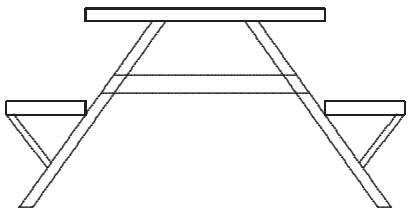
8. A park needs seven new picnic tables, each with a top and two seats. The tops are each made from four boards and each seat is made from two boards.



How many boards does the park manager need to order?

(A) 66 (B) 35 (C) 60 (D) 70 (E) 56

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9. A cyclist rides 25 kilometres every day for a week. If he starts on a Monday, by what day would he have ridden 60 kilometres?

(A) Tuesday (B) Wednesday (C) Thursday
(D) Friday (E) Saturday

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10. In the number sentence

$$10 \text{ hundreds} + 100 \text{ tens} = \square \text{ tens},$$

what number goes in the box to make it true?

(A) 100 (B) 20 (C) 110 (D) 200 (E) 1000

Questions 11 to 20, 4 marks each

11. Jenny has three boxes, each having the same number of toy cars inside. She finds two more cars down the back of the sofa. When she counts all her cars she finds that she has 17. How many cars are there in each box?

(A) 3 (B) 5 (C) 6 (D) 8 (E) 15

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12. Three drips make two drops. How many drips make 18 drops?

(A) 6 (B) 12 (C) 27 (D) 36 (E) 48

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13. A box holds socks which are all the same size. There are 6 white, 10 blue and 16 grey socks. What is the least number of socks I need to take out, without looking, so that I can be certain of getting a pair of matching socks?

(A) 3 (B) 4 (C) 5 (D) 6 (E) 10

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14. In the number sentence,

$$40 \times 40 = 20 \times 20 \times \square$$

what number do we put in the $\square$ to make the number sentence true?

(A) 2 (B) 4 (C) 8 (D) 16 (E) 40

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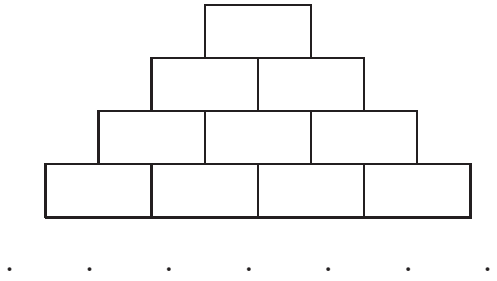
15. There is a stack of 45 blocks with one block on top, 2 blocks in the next row, 3 in the next row and so on. How many blocks are in the bottom row and how many rows are there?



(A) 9 blocks and 10 rows (B) 10 blocks and 10 rows
(C) 8 blocks and 8 rows (D) 6 blocks and 9 rows
(E) 9 blocks and 9 rows

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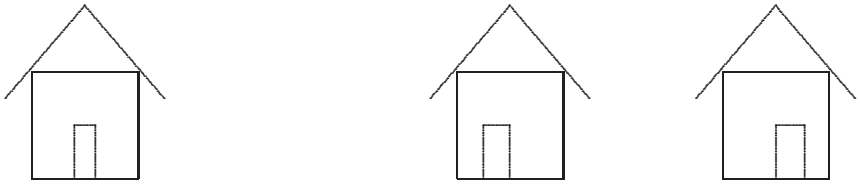
16. Annie leaves home at 9:15 am to walk to Derek's house, which takes her 25 minutes. Carl leaves his house 5 minutes after Annie but only takes 6 minutes to get to Derek's house. When Carl arrives, how long, in minutes, will he and Derek have to wait for Annie to arrive?



(A) 6 (B) 11 (C) 14 (D) 21 (E) 24

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17. At half-time in a soccer match between Newcastle and Melbourne, the score was Newcastle 1, Melbourne 0. Three goals were scored in the second half. Which of the following could **not** be the result of the match?

(A) The match was drawn (B) Newcastle won by 2 goals
(C) Melbourne won by 2 goals (D) Newcastle won by 1 goal
(E) Newcastle won by 4 goals

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18. A 1 metre square of cardboard is cut up into 1 cm by 1 cm squares. If these squares were laid side by side, what distance would they cover?

(A) 1000 cm (B) 200 m (C) 20 m (D) 100 m (E) 100 cm

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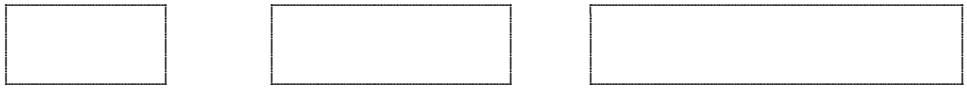
19. I have three rectangular tiles, which are 2 cm by 1 cm, 3 cm by 1 cm and 4 cm by 1 cm.



If I put them together so that they do not overlap, but touch along edges, what is the smallest possible perimeter of their combined shape?

(A) 14 cm (B) 16 cm (C) 18 cm (D) 20 cm (E) 24 cm

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20. Lying Larry decided that from now on he is going to tell the truth on Mondays, Wednesdays and Fridays, but will lie on all the other days. Once, he said 'Tomorrow I am going to tell the truth.'
On what day did this happen?

(A) Saturday (B) Friday (C) Sunday
(D) Wednesday (E) Monday

Questions 21 to 25, 5 marks each

21. If four days after the day before yesterday was Saturday, what day will tomorrow be?

(A) Saturday (B) Wednesday (C) Sunday (D) Thursday (E) Friday

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22. In a group of students, 14 collect stamps, 16 collect postcards, 5 collect both but 4 collect neither. How many students are in the group?

(A) 39 (B) 34 (C) 29 (D) 35 (E) 64

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23. In the 5×5 square below, the numbers 1, 2, 3, 4 and 5 are to be placed in the squares so that each number appears exactly once in each row and once in each column. Some numbers have already been placed.

			3	2
2				
		5	X	
		1		3
5			1	

When the square is completed, the number which is in the square marked with an X is

(A) 1 (B) 2 (C) 3 (D) 4 (E) 5

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24. I have some animals, an equal number of goats and lions, which I wish to ferry across a river but my boat will allow me to take only one animal at a time. I cannot leave one goat on its own on either side nor can I leave 1 goat with 1 lion (but I can leave 2 or more goats with a lion or 2 or more lions with a goat). What is the smallest number of goats such that I can ferry the group across without breaking these restrictions?

(A) 2 (B) 3 (C) 4 (D) 5 (E) 6

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25. The desks in Amy's classroom are arranged in five rows of five, equally spaced apart. Amy's friend Sam sits in the opposite corner to her. How many people are closer to Sam than they are to Amy?

(A) 8 (B) 9 (C) 11 (D) 12 (E) 14

For questions 26 to 30, shade the answer as a whole number from 0 to 999 in the space provided on the answer sheet.

Question 26 is 6 marks, question 27 is 7 marks, question 28 is 8 marks, question 29 is 9 marks and question 30 is 10 marks.

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26. In a circle dance, everyone is evenly spaced around a circle and has a number in the order 1, 2, 3, 4, 5, . . . , and so on. The dancer with number 15 is directly opposite dancer number 3. How many dancers are in the circle?

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27. A theatre sets up its chairs in equal rows. Alison had a seat which was third from the front and 18th from the back. Naida could see 8 chairs to her left and 11 to her right. How many chairs are in the theatre?

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28. Jim takes an hour to fold the weekly washing for the whole family. His older sister Susan can do the same job in half the time. How many minutes would it take them to fold the washing together if they continue to fold at their own rates?

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29. What is the largest number less than 1000, which is odd, leaves a remainder of 2 when divided by 3, and a remainder of 4 when divided by 5?

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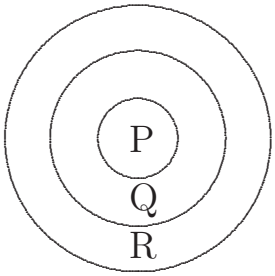
30. Anne designs the dart board shown, where she scores P points in the centre circle, Q points in the next ring and R points in the outer ring. She throws three darts in each turn. In her first turn, she gets two darts in ring Q and one in ring R and scores 10 points. In her second turn, she gets two in circle P and one in ring R and scores 22 points.



In her next turn, she gets one dart in each of the regions. How many points does she score?

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