AUSTRALIAN MATHEMATICS TRUST

AUSTRALIAN MATHEMATICS COMPETITION

AN ACTIVITY OF THE AUSTRALIAN MATHEMATICS TRUST

NAME

YEAR TEACHER

2018
MIDDLE PRIMARY DIVISION

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. Mobile phones are not permitted.
3. Diagrams are NOT drawn to scale. They are intended only as aids.
4. There are 25 multiple-choice questions, each requiring a single answer, and 5 questions that require a whole number answer 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 country/Australian state 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 entered. It is your responsibility to correctly code your answer sheet.
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 scanned. The optical scanner will attempt to read 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 AMT 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. What is double 4?

(A) 2 (B) 3 (C) 8 (D) 12 (E) 24

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2. Which pattern has exactly 10 dots?

(A)  (B)  (C)  (D)  (E) 

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3. Which of the following is the same as 6 tens and 3 ones?

(A) sixty-three (B) six and three (C) thirty-six

(D) six hundred and three (E) sixty-one

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4. When I add 11 and another number, I get 19. What is the other number?

(A) 7 (B) 8 (C) 9 (D) 10 (E) 11

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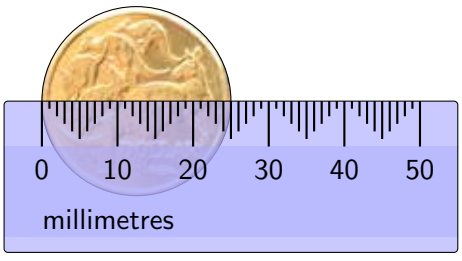
5. What is the diameter of this coin?

(A) 20 mm (B) 21 mm (C) 22 mm

(D) 25 mm (E) 30 mm



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6. Which one of these numbers is closest to 208?

(A) 190 (B) 200 (C) 205 (D) 210 (E) 218

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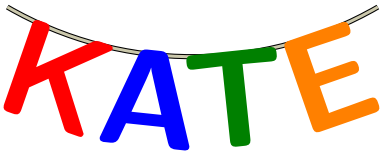
7. Kate made this necklace from alphabet beads.



She put it on the wrong way around, showing the back of the beads. What does this look like?

(A) 

(B) 

(C) 

(D) 

(E) 

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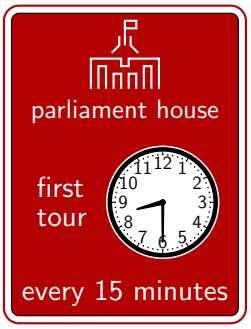
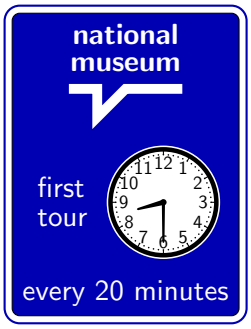
8. Each day, tours of Parliament House and the National Museum begin at 8.30 am. The tours for Parliament House leave every 15 minutes and the tours for the National Museum leave every 20 minutes.





How often do the tours leave at the same time?

(A) every 5 minutes (B) every 15 minutes (C) every 30 minutes

(D) every 45 minutes (E) every 60 minutes

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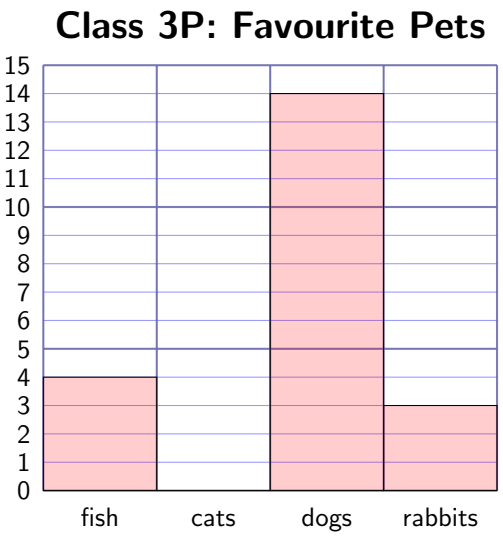
9. The children in class 3P voted on their favourite pets. Sally recorded the results in a column graph but forgot to draw in the column for cats.

There are 29 children in the class and everyone voted once.

How many children voted for cats?



(A) 5 (B) 6 (C) 7 (D) 8 (E) 9

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10. Which of the following is a whole?

(A) 1 half plus 2 quarters (B) 2 quarters plus 2 halves
(C) 3 quarters plus 1 half (D) 1 half plus 1 quarter
(E) 4 quarters plus 1 half

Questions 11 to 20, 4 marks each

11. Mrs Chapman put 58 books back on the library shelves. She put 12 books on each shelf except the last shelf. How many books did she put on the last shelf?

(A) 7 (B) 8 (C) 9 (D) 10 (E) 11

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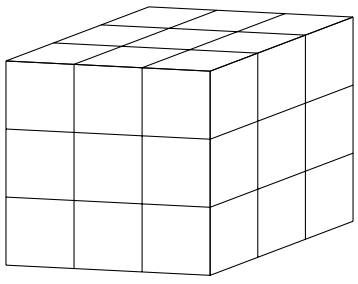
12. This solid cube is built from small cubes.

How many small cubes cannot be seen from this view?



(A) 6 (B) 8 (C) 9 (D) 10 (E) 11

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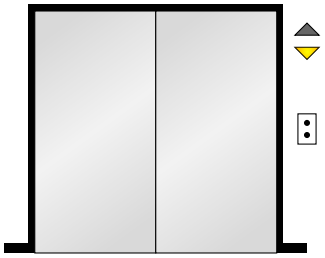
13. Shelley walked into a lift.

She went down 5 floors, up 6 floors, then down 7 floors. She was then on the second floor.

On which level did she enter the lift?

(A) 1st floor (B) 2nd floor (C) 3rd floor

(D) 6th floor (E) 8th floor



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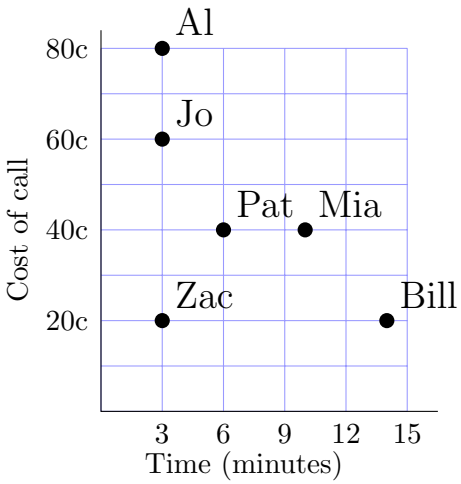
14. Six friends each make a phone call to another city.

The cost of each call depends on the time taken for the call as well as the distance.

From this diagram decide whose phone call lasts longer than Pat's, but costs less.

(A) Al (B) Bill (C) Jo

(D) Mia (E) Zac



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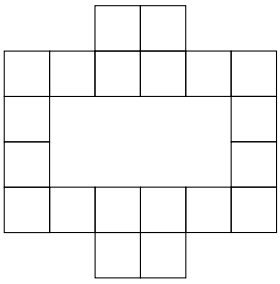
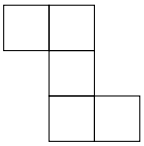
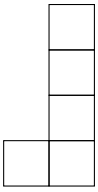
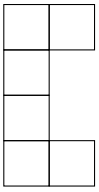
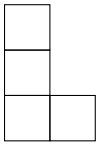
15. One of these shapes made of squares has been flipped and turned to make the following pattern, without any overlaps. Which one?

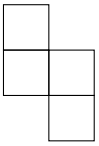


(A) 

(B) 

(C) 

(D) 

(E) 

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16. Karen, Warren, and Andrew bought plastic letters to spell each of their names on their birthday cakes.

Their birthdays are on different dates, so they planned to reuse letters on different cakes.

What is the smallest number of letters they needed?

(A) 6 (B) 7 (C) 8 (D) 9 (E) 10

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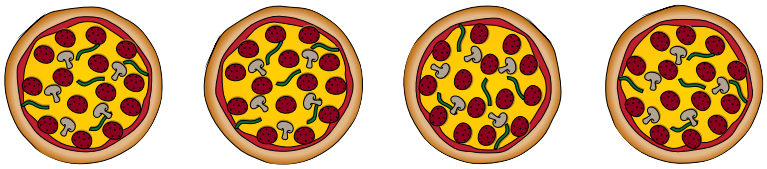
17. At Susie's party, they have four pizzas to share and each person gets $\frac{2}{3}$ of a pizza. How many people are at the party?



(A) 4 (B) 6 (C) 8 (D) 12 (E) 16

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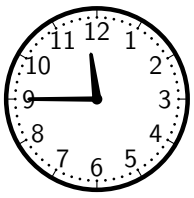
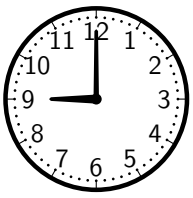
18. Fred looked at the clock during the Library lesson.

Which one of these times could the clock have shown?

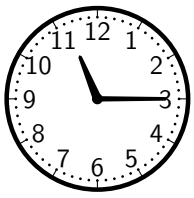
Friday timetable	
9.00 am	English
10.00 am	Mathematics
11.00 am	Recess
11.30 am	Library
12.30 pm	Assembly
1.00 pm	Lunch
2.00 pm	Sport

(A) 

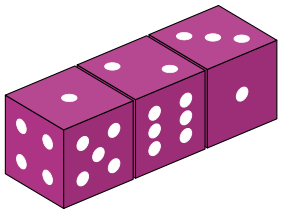
(B) 

(C) 

(D) 

(E) 

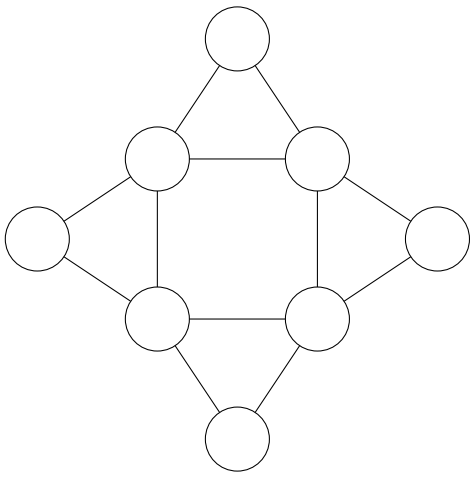
19. Three standard dice are sitting next to each other as shown in the diagram. There are 7 faces visible. How many dots are hidden on the other 11 sides?



(A) 26 (B) 36 (C) 41 (D) 54 (E) 63

20. The numbers from 1 to 3 are entered into the circles in the grid shown. Two circles joined by a line may not contain the same number.

There are several ways of doing this. What is the smallest possible total of the eight numbers?



(A) 10 (B) 12 (C) 14 (D) 15 (E) 16

Questions 21 to 25, 5 marks each

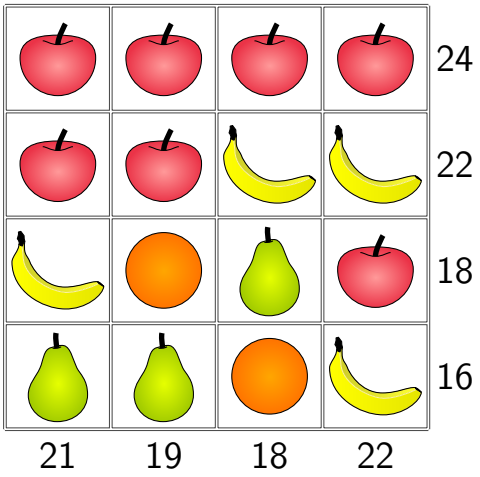
21. Six small eggs weigh the same as five medium eggs. Six medium eggs weigh the same as four large eggs. How many small eggs would weigh the same as five large eggs?

(A) 5 (B) 6 (C) 8 (D) 9 (E) 12

22. Pictures of fruit have been placed in this grid to represent numbers less than 10.

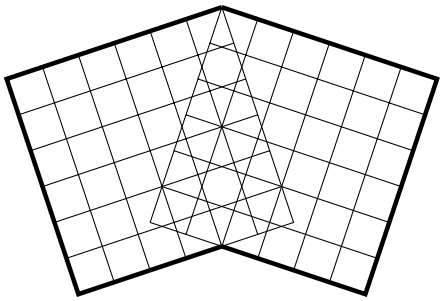
The totals for each row and column are shown.

What is the total value of an apple and an orange ?



(A) 8 (B) 9 (C) 10 (D) 11 (E) 12

23. Warren drew two large squares that overlap to form the hexagon shown. The area of each small square is 1 square centimetre.



In square centimetres, what is the total area of the hexagon that Warren drew?

(A) 12 (B) 36 (C) 48 (D) 60 (E) 72

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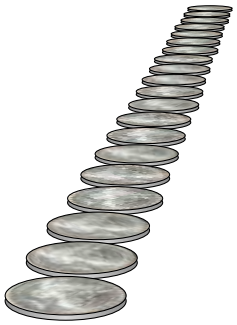
24. Beginning with a row of 20 coins, Anh takes the first coin, then every fourth coin after that.



From the remaining coins, Brenda takes the first coin and every third coin after that.

From the remaining coins, Chen takes the first coin and every second coin after that.

Dimitris takes all the remaining coins.

Does anyone get more coins than all the others?

(A) Yes, Anh does (B) Yes, Brenda does

(C) Yes, Chen does (D) Yes, Dimitris does

(E) No, they all get the same number of coins

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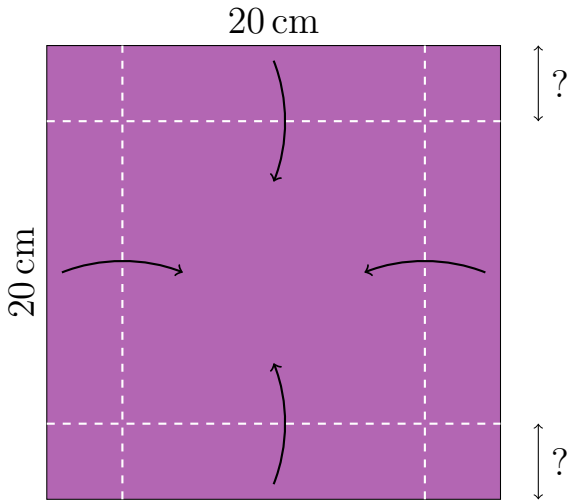
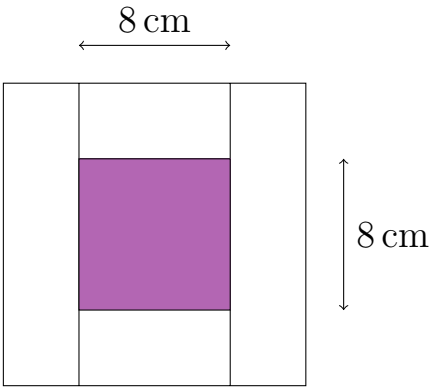
25. Yasmin has a 20 cm × 20 cm square of paper that is coloured on one side. She folds over a strip along each edge to make a white square with an 8 cm × 8 cm coloured square inside. How far from each edge is each fold?





(A) 8 cm (B) 6 cm (C) 4 cm (D) 3 cm (E) 1 cm

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

Questions 26–30 are worth 6, 7, 8, 9 and 10 marks, respectively.

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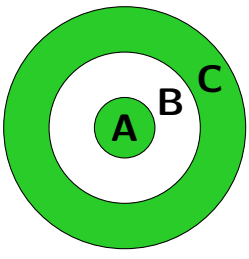
26. Four archers are having some target practice, each with two arrows.

Ari hits regions A and C for a total of 15. Billy hits regions A and B for a total of 18. Charlie hits regions B and C for a total of 13.

If Davy hits region B twice, what will his score be?



27. A teacher wants her students to guess the three-digit number that she is thinking. She gives these clues:

- It is divisible by both 3 and 11.
- If you subtract one, the result is divisible by both 2 and 7.

Which number is it?

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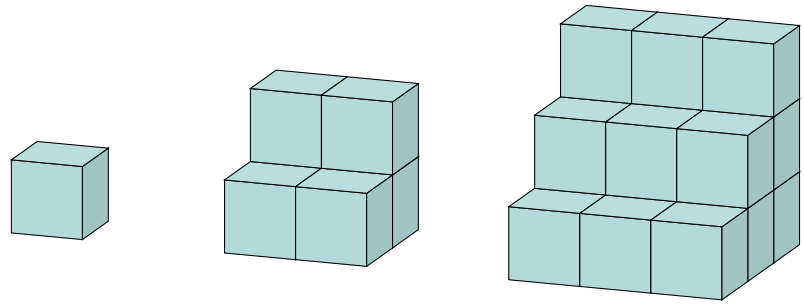
28. These staircases are made from layers of blocks.
Each staircase is one block wider, one block longer and one block taller than the previous staircase.
How many blocks are needed to build the 12-step staircase?



One step Two steps Three steps

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29. In the algorithm below, the letters a, b and c represent different digits from 0 to 9.
What is the three-digit number abc?

$$\begin{array}{cccc} & & & a \\ & & a & b \\ & a & b & c \\ + & 1 & 0 & 0 & 0 \\ \hline & 2 & 0 & 1 & 8 \end{array}$$

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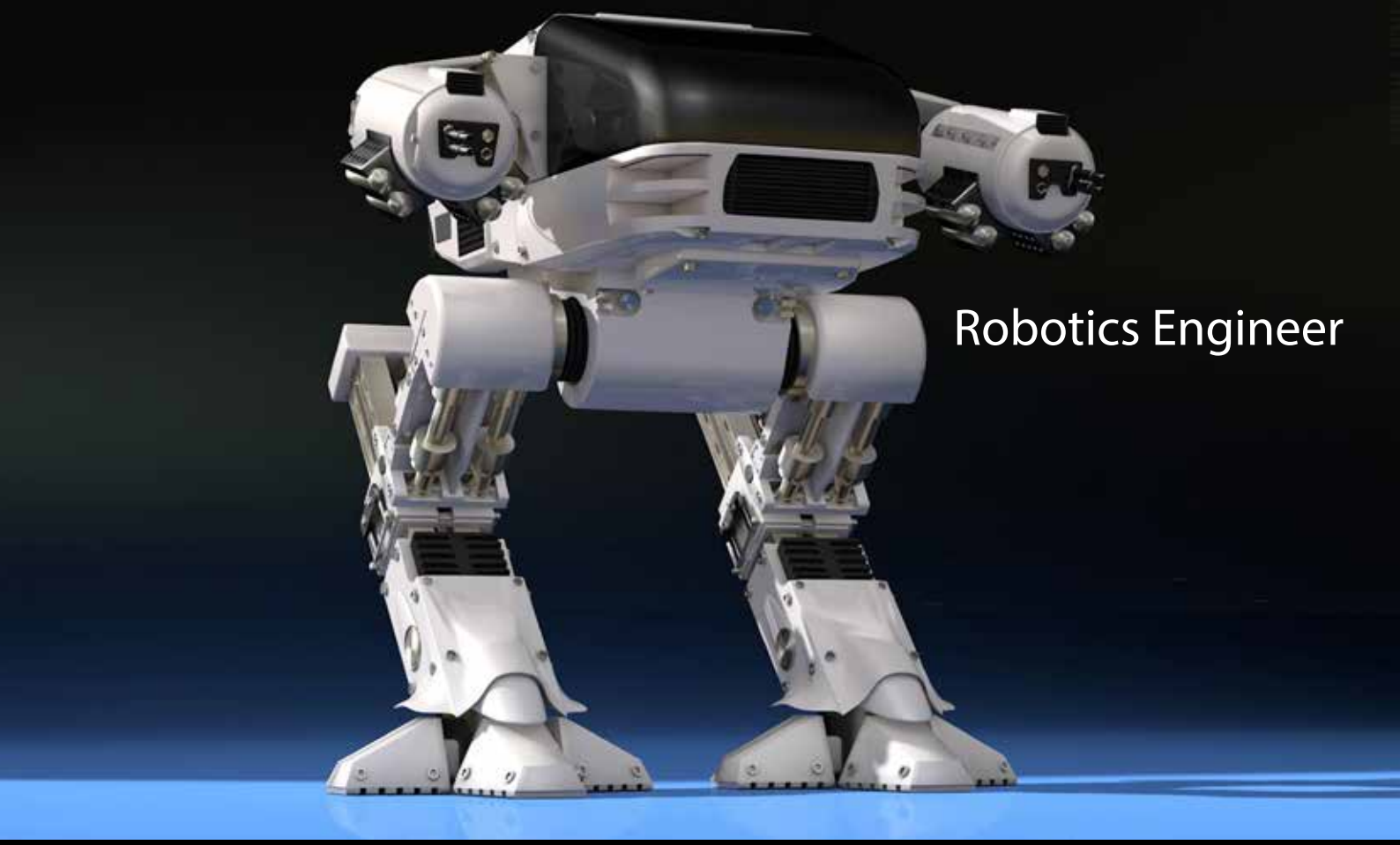
30. I wrote the counting numbers joined together:

$$12345678910111213141516 17\ldots$$

Which of the counting numbers was I writing when the 100th zero was written?

MATHEMATICS IS IN YOUR DREAM JOB



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For years 3-4 we recommend **AMC Primary books 1-2**. Each book covers 5 years of AMC questions with solutions and is a great resource to develop your problem -solving skills. If you want to sample our MCYA programs, we recommend **Problems to Solve in Primary School Mathematics** and the **Ramanujan Student Notes**. They provide ideal materials if you are looking for a challenge.

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