AUSTRALIAN MATHS TRUST

AUSTRALIAN MATHEMATICS COMPETITION

Middle Primary Years 3 & 4

(Australian school years)

THURSDAY 1 AUGUST 2019

NAME: _____

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.

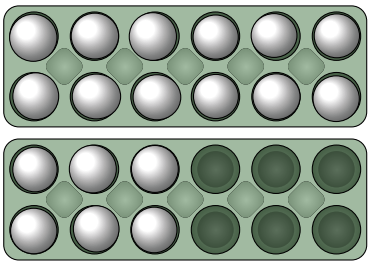
Reminder: You may sit this competition once, in one division only, or risk no score.

Middle Primary Division

Questions 1 to 10, 3 marks each

1. How many eggs are in these cartons?

(A) 12 (B) 15 (C) 16 (D) 18 (E) 21



2. Which one of the following is the largest number?

(A) 401 (B) 410 (C) 14 (D) 140 (E) 44

3. Which of the following is equal to 3 m?

(A) 3 cm (B) 30 cm (C) 300 cm (D) 3000 cm (E) 36 cm

4. A bowl has 8 peaches. After the children take one each, there is one peach left. How many children are there?

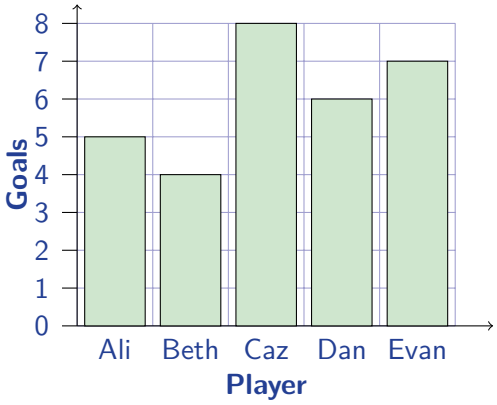
(A) 5 (B) 6 (C) 7 (D) 8 (E) 9

5. A *Runnyball* team has 5 players.

This graph shows the number of goals each player scored in a tournament.

Who scored the second-highest number of goals?

(A) Ali (B) Beth (C) Caz (D) Dan (E) Evan



6. The next counting number after 1089 is

(A) 1090 (B) 10810 (C) 1910 (D) 1900 (E) 1009

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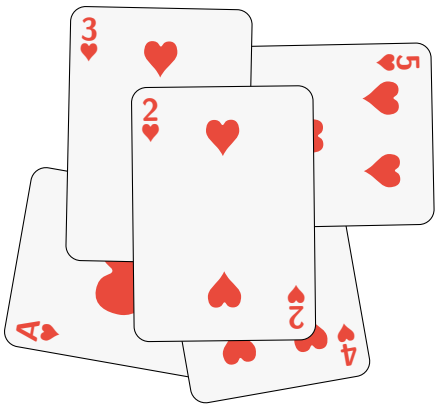
7. These cards were dropped on the table, one at a time.
In which order were they dropped?



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

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8. The table shows the pets six children own.
Which boy owns a dog?

	Cat	Dog	Fish
Girls	Chris	Jo	Sam
Boys	Teejay	Finn	Alex

(A) Alex (B) Chris (C) Finn
(D) Jo (E) Teejay

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9. Sophia is at the corner of 1st Street and 1st Avenue. Her school is at the corner of 4th Street and 3rd Avenue.
To get there, she walks

(A) 4 blocks east, 3 blocks north
(B) 3 blocks west, 4 blocks north
(C) 4 blocks west, 2 blocks north
(D) 3 blocks east, 2 blocks north
(E) 2 blocks north, 2 blocks south

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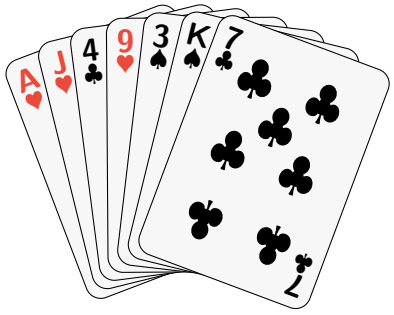
10. Jake is playing a card game, and these are his cards.



Elena chooses one card from Jake at random.

Which of the following is Elena most likely to choose?

(A) a heart (♥) (B) a diamond (♦) (C) a spade (♠)

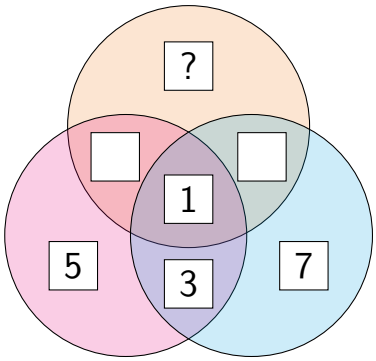
(D) a picture card (J, Q or K) (E) an even-numbered card

Questions 11 to 20, 4 marks each

11. In Jacqui's puzzle, a number is put in each box.

In each circle, the four numbers must add to 13.

Which number goes in the top box?



(A) 2 (B) 3 (C) 4

(D) 5 (E) 6

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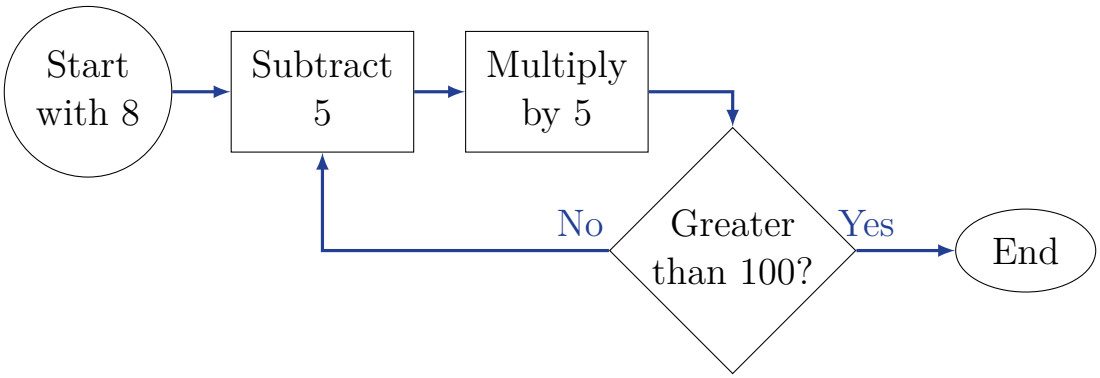
12. Noah follows the instructions in this flow chart. What number does he end with?



(A) 120 (B) 150 (C) 200 (D) 225 (E) 250

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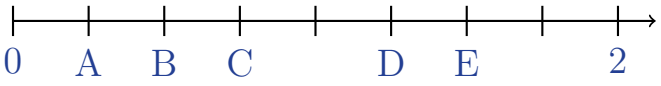
13. On this number line, where would the number $\frac{1}{2}$ be?



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

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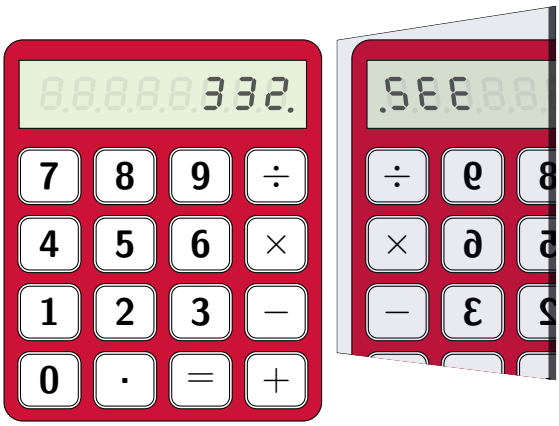
14. When Bessie puts a mirror next to her calculator, the digits sometimes spell words in the mirror.
Which number spells 'BESSIE' in the mirror?

(A) 315538 (B) 835513
(C) 832213 (D) 815312
(E) 312238



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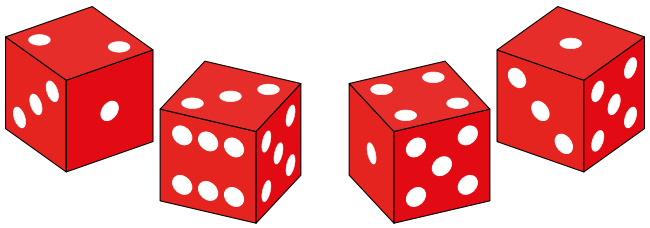
15. Looking at this view of four dice, how many dots cannot be seen?

(A) 21 (B) 28 (C) 32
(D) 36 (E) 45



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16. A pencil costs 25 cents and a ruler costs 80 cents.
With \$5 I bought one ruler and as many pencils as I could afford.
What change did I get?

(A) 25 cents (B) 20 cents (C) 15 cents (D) 10 cents (E) 5 cents

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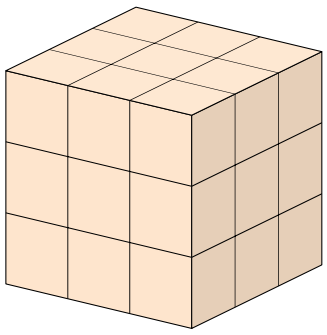
17. 27 identical cubes are used to make this $3 \times 3 \times 3$ cube.
How many more are needed to make a $4 \times 4 \times 4$ cube?

(A) 1 (B) 25 (C) 27
(D) 36 (E) 37



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18. Meena has a \$50 gift voucher to spend in a toyshop, but they won't give change from the voucher. Here is a short list of toys she would like. She tried to spend as much of the \$50 as possible.


\$24


\$14

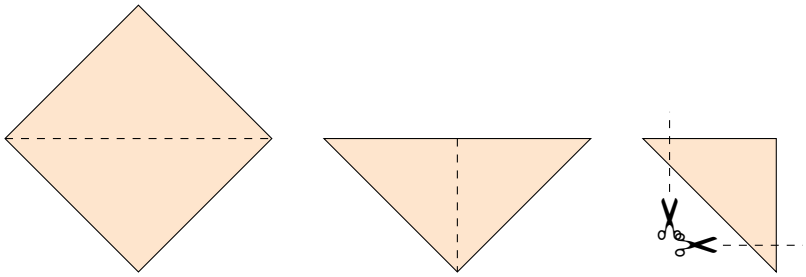

\$6


\$39

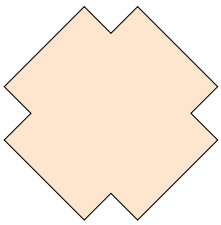
If she buys no more than one of each toy, how much of the voucher will not get used?

(A) \$1 (B) \$3 (C) \$5 (D) \$7 (E) \$9

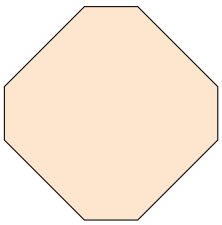
19. A square piece of paper is folded twice along its diagonals, as shown in the diagram. Two corners are then cut off. When the paper is unfolded, what will it look like?



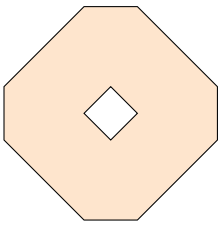
(A)



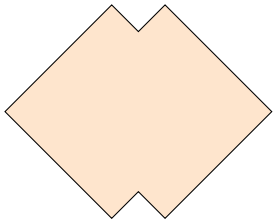
(B)



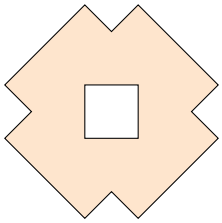
(C)



(D)



(E)



20. It takes Preeti 30 minutes to walk to school.

Sometimes she goes on her bike and she cycles twice as fast as she walks.

Occasionally, her mother takes her in the car, which goes three times as fast as her bike. How many minutes does it take to get to school in the car?

(A) 2 (B) 4 (C) 5 (D) 10 (E) 15

Questions 21 to 25, 5 marks each

21. In my dance class, 14 students are taller than Bob, and 12 are shorter than Alice. Four students are both shorter than Alice and taller than Bob. How many students are in my dance class?

(A) 22 (B) 24 (C) 26 (D) 28 (E) 30

22. My sister and I are playing a game where she picks two counting numbers and I have to guess them. When I tell her a number, she multiplies my number by her first number and then adds her second number.

When I say 15, she says 50. When I say 2, she says 11.

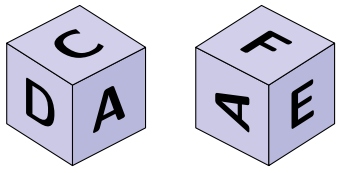
If I say 6, what should she say?

(A) 23 (B) 27 (C) 35 (D) 41 (E) 61

23. A year 6 student saved 100 cents in 5 days, each day saving 5 cents more than the previous day. How many cents did she save on the fifth day?

(A) 20 cents (B) 25 cents (C) 30 cents (D) 40 cents (E) 50 cents

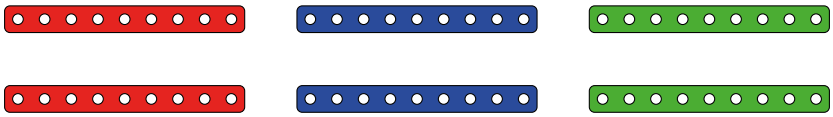
24. A cube has the letters A, M, C, D, E and F on its six faces. Two different views of the cube are shown.



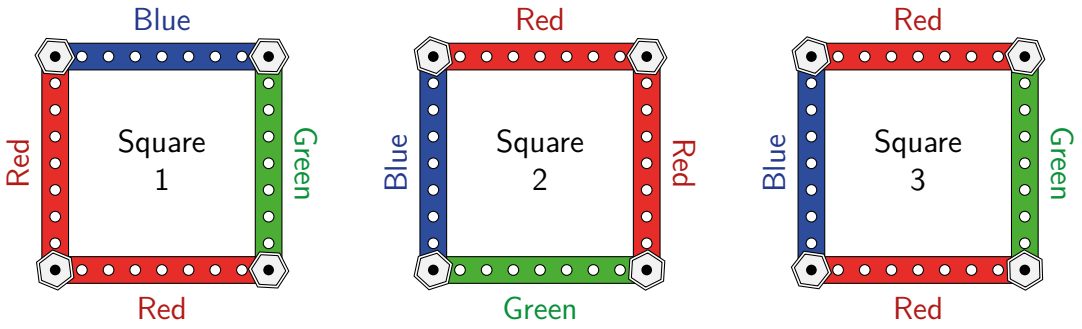
I place the cube on the table so that the front shows **C**. If I look at the back of the cube, what will I see?

(A) **D** (B) **E** (C) **F** (D) **M** (E) **F**

25. Shirley has six pieces of her construction kit: two red, two blue and two green. She wants to build a square using four of the pieces.



Shirley considers Square 1 below to be the same as Square 2, since the colours match once Square 2 is turned over and rotated. However she considers Square 3 to be different from Square 1, since no matter how it is turned, the two red sides are always opposite, and cannot match Square 1.



How many different squares could she build?

(A) 4 (B) 8 (C) 12 (D) 16 (E) 18

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. At my local greengrocer, you take a ticket from the machine and wait until your number is called. The roll of tickets goes from 000 up to 999.

When I was there last week with my neighbour, we took two tickets in a row and our two numbers added to 777.

What was the next ticket number after ours?

27. There are 390 children at a summer camp.

One-third of the number of girls is equal to one-half of the number of boys. How many girls are there?

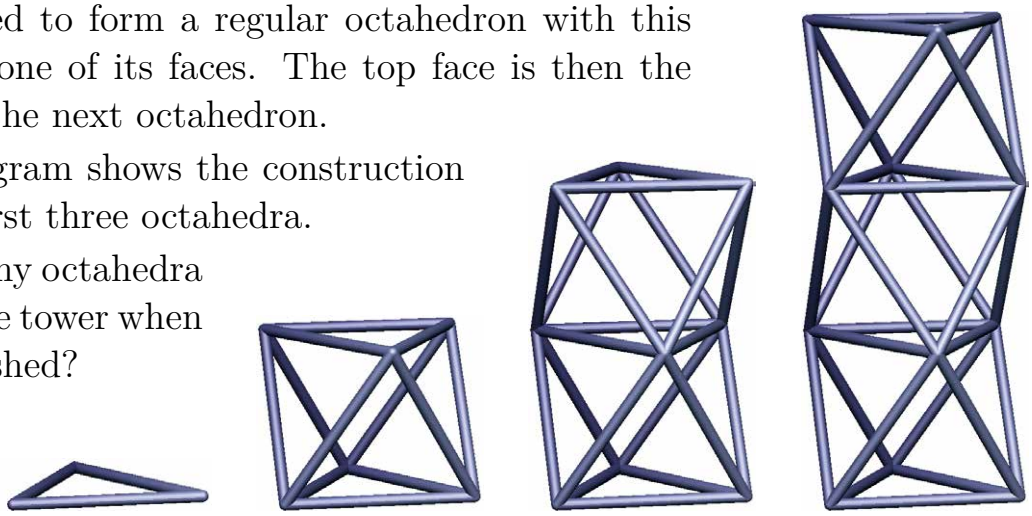
28. How many of the numbers from 100 to 999 have exactly one zero digit?

29. A tower is built from exactly 2019 equal rods.

Starting with 3 rods as a triangular base, more rods are added to form a regular octahedron with this base as one of its faces. The top face is then the base of the next octahedron.

The diagram shows the construction of the first three octahedra.

How many octahedra are in the tower when it is finished?

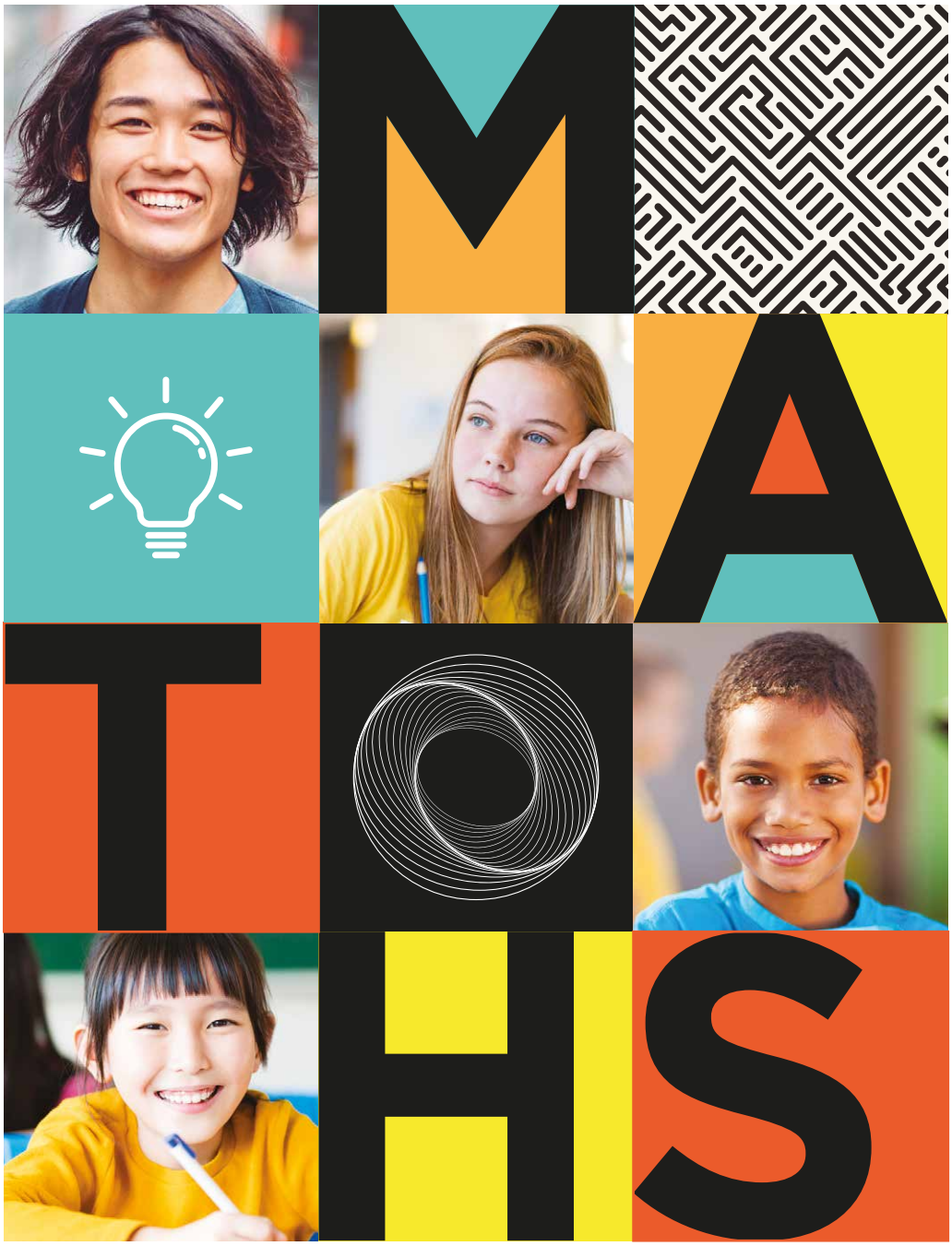


30. John is one year older than his wife Mary. They have three children, whose ages are two years apart.

The product of John and Mary's ages is less than 2019. The product of the three children's ages is also less than 2019.

Next year both these products will be greater than 2020.

This year, what is the sum of all five ages?



SOLVE PROBLEMS. CREATE THE FUTURE.

Problems are part of life and we've made it our mission to equip young students with the skills to solve more of them. Problem solving is a life skill and by developing it, students can create more choices for themselves and the future.

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