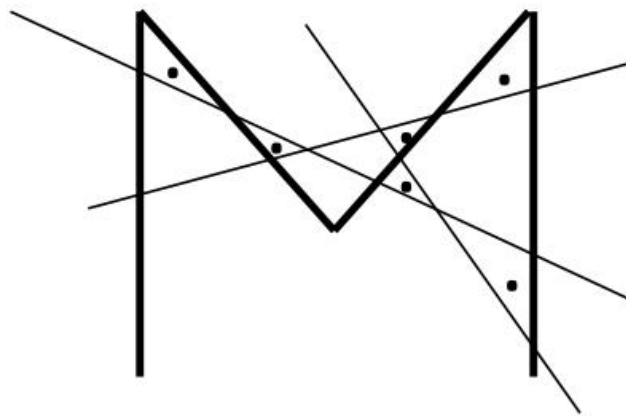
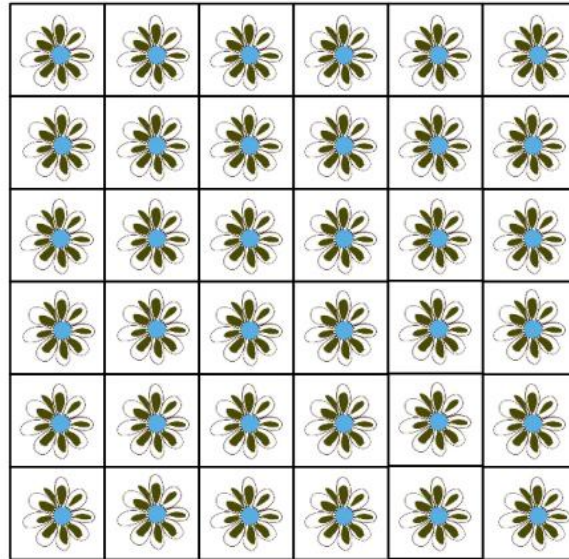


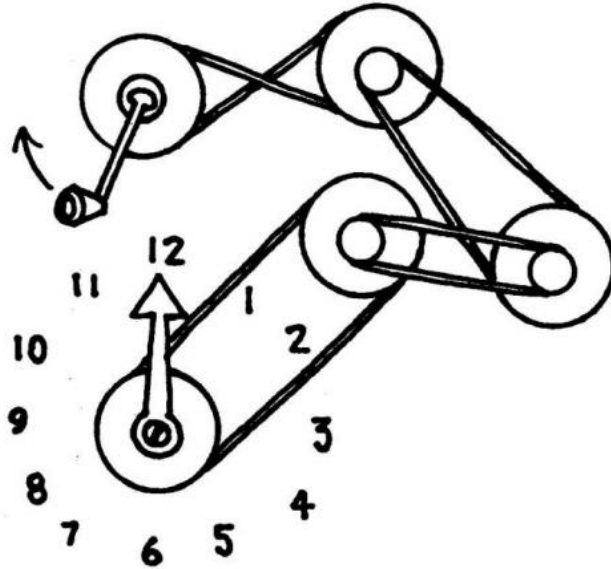
35. We have formed six triangles by drawing three straight lines on the M . That's not enough. Starting with a new M , let form nine triangles by drawing three straight lines.



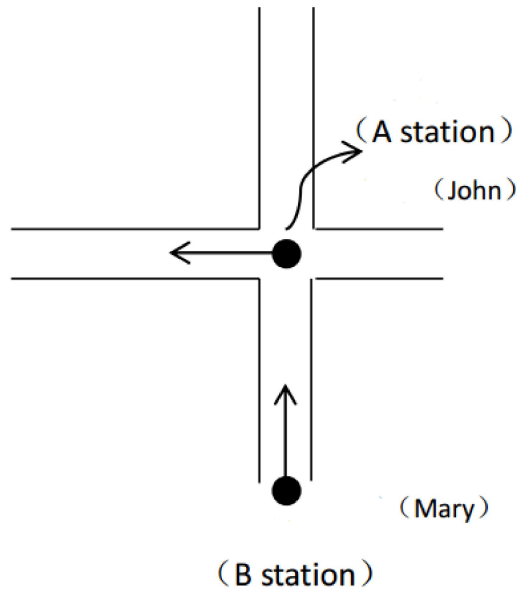
36. There are 36 flowers in the 6×6 boxes below. Please cut off 12 flowers from the boxes below so that each row and column contains the same amount of flowers.



37. The five identical wheels of this machine are connected by a series of belts. The outer rim of each wheel has a circumference of 8 centimetres. The rim of each wheel's inner shaft has a circumference of 4 centimetres. If the crank is rotated upwards one-quarter turn, what hour would the clock's hand point to?



38. As shown below, the north-south and east-west highways are perpendicular to each other. One day, Mary drives to north from station B and John drives to west from station A. After 4 minutes, the distance of the two vehicles from the station A is the same. If they continue to travel in their respective directions, after 24 minutes, the two vehicles will still be the same distance from station A. The speed of John is 1.5kilometres per minute. Find the distance in kilometres between station A, and B.



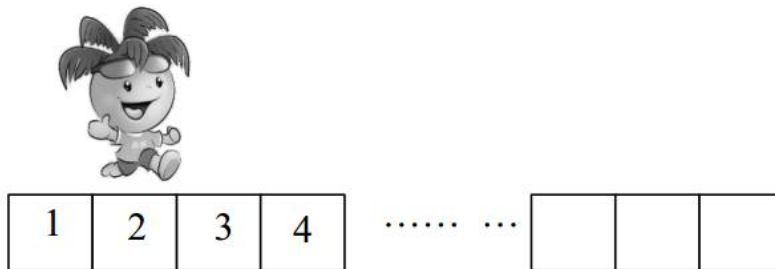
39. The goal of this puzzle is to replace the question marks with a correct sequence of numbers. The black dots and white dots are the hints given to solve the question. The hints of the dots are stated as:

- (1) A black dot indicates that a number needed for the solution is in that row and in the correct position;
- (2) A white dot means that a number needed for the solution is in that row, but in the wrong position. Numbers do appear more than once in the solution, and the solution never begins with 0.

4	0	8	7	6	○	○
2	3	4	9	7	●	●
1	5	4	7	2	●	
7	5	6	0	4	○	
?	?	?	?	?		

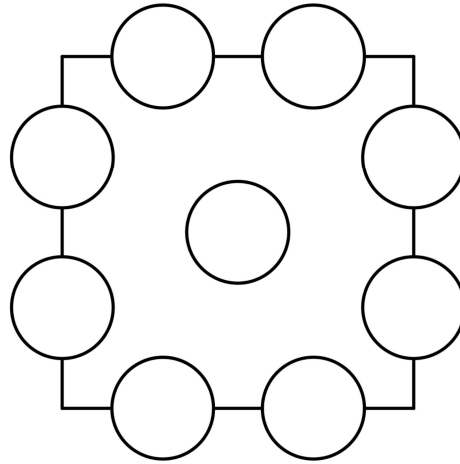
40. An evil dragon has three heads and three tails. You can slay it with the sword of knowledge, by chopping off all its heads and tails. With one stroke of the sword, you can chop off either one head, two heads, one tail, or two tails. But the dragon is not easy to slay! If you chop off one head, a new one grows in its place. If you chop off one tail, two new tails replace it. If you chop off two tails, one new head grows. If you chop off two heads, nothing grows. At least, how many chops do you need to slay the dragon?
41. Wendy has created a jumping game using a straight row of floor tiles that she has numbered $1, 2, 3, 4, \dots$. Starting on tile 2, she jumps along the row, landing on every second tile, and stops on the second to last tile in the row. Starting from this tile, she turns

and jumps back toward the start, this time landing on every third tile. She stops on tile 1. Finally, she turns again and jumps along the row, landing on every fifth tile. This time, she stops on the second to last tile again. What is the at least minimum number of tiles?

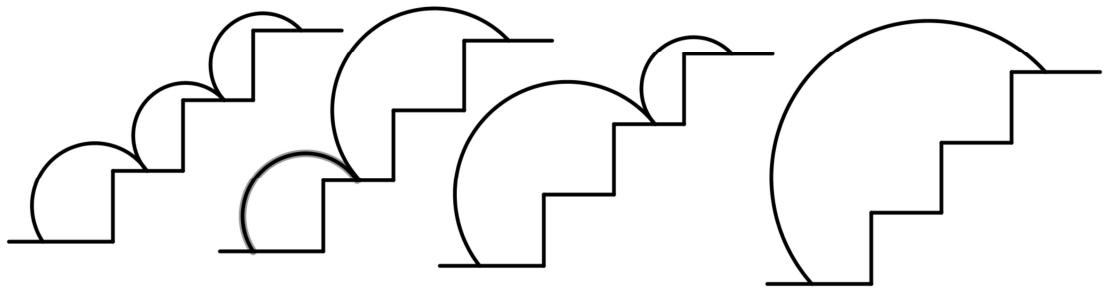


42. The “0” button on Ali’s calculator is broken, so he can not enter numbers which contain “0”. Unfortunately, his calculator does not display 0, even if it is part of an answer, either. So he can not enter the calculation 9×20 and does not attempt to do so. Also, the result of adding 56 and 24 is displayed as 8 (instead of 80) and the result of multiplying 7 by 29 is displayed as 23 (instead of 203). If Ali multiplies a single-digit number by a two-digit number on his calculator it displays 35. List all the possibilities for the two numbers that he could have multiplied.
43. Each number from 1 to 9 is placed, one per circle, into the pattern shown. The sums along each of the

four sides are equal. How many different numbers can be placed in the middle circle to satisfy these conditions?

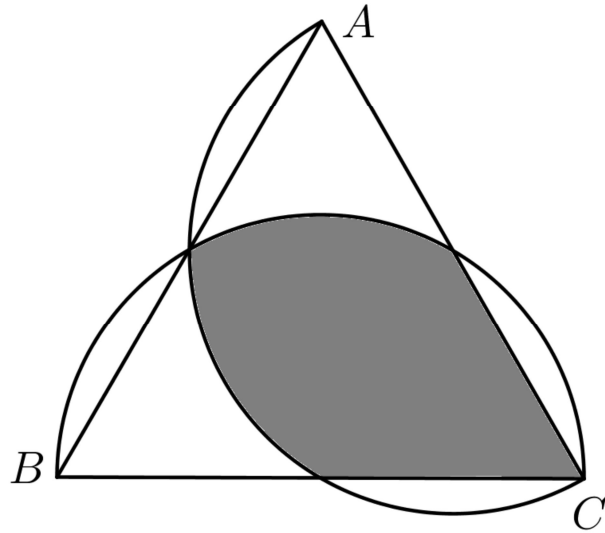


44. It is possible to climb three steps in exactly four different ways. In how many ways can you climb ten steps?



45. As shown in below figure, ABC is an equilateral triangle with a side length of 10cm. If using AC

and BC as radius to draw circles, what is the area of the shaded portion? (Use $\pi = 3.14$, and find an answer correct to 2 decimal places).



46. Stanley wrote a 4-digit number on a piece of paper and challenged Darrell to guess it. All the digits were different.

Darrell: It is 4607?

Stanley: Two of the numbers are correct but are in the wrong position.

Darrell: Could it be 1385?

Stanley: My answer is the same as before.

Darrell: How about 2879?

Stanley: Wow, two of the numbers are correct and in the right places as well.

Darrell: 5461?

Stanley: None of the digits is correct.

What was the number?

47. Four football teams A , B , C and D are in the same group. Each team plays 3 matches, one with each of the other 3 teams. The winner of each match gets 3 points; the loser gets 0 points; and if a match is a draw, each team gets 1 point. After all the matches, the results are as follows:
- (1) The total scores after the 3 matches for the four teams are consecutive odd numbers.
 - (2) D has the highest total score.
 - (3) A has exactly 2 draws, one of which is the match with C .

Find the total score for each team.

48. Jane has 9 boxes and 9 accompanying keys. Each box can only be opened by one key. If the 9 keys have been mixed up, find the maximum number of attempts Jane must make before she can open all the boxes.
49. Starting with the “1” in the centre, the spiral of consecutive integers continues, as shown. What is

the difference between the numbers that appears directly below and above 2016?

↑	13	14	15	16	17	
↑	12	3	4	5	18	
↑	11	2	1	6	19	
27	10	9	8	7	20	
26	25	24	23	22	21	

50. Let $\prod(\overline{abc}) = a \times b \times c$. For example, $\prod(137) = 1 \times 3 \times 7 = 21$ and $\prod(234) = 2 \times 3 \times 4 = 24$. Find the value of the expression $\prod(200) + \prod(201) + \prod(202) + \cdots + \prod(300)$.

51. A combination lock on a safe needs a 6-letter sequence to unlock it. This is made from the letters A, B, C, D, E, F with none of them being used twice. Here are three guesses at the combination

$C B A D F E$

$A E D C B F$

$E D F A C B$

In the FIRST guess only ONE letter is in its correct