2025 Team Up Challenge

Instructions for Teachers

This document provides instructions for running the Team Up Challenge. The instructions should be used as a suggestion only; teachers should feel free to make modifications in order to suit their classes. Ideally there should be four students per team, however this matters more for the relay than the other three parts.

Preparing Materials

In advance of running the Team Up Challenge, we recommend teachers prepare each part as indicated below. Students may want to use scrap paper and calculators as well.

Part	Instructions
Team Paper	Print one copy of the problems per student and one answer sheet per team.
Crossnumber Puzzle	Print one copy of the puzzle sheet and clue sheets per team.
Logic Puzzle	Print one clue sheet and one answer sheet per student.
Relay	Print one copy of the problems and one answer sheet per team. Cut the problem sheets on the dotted lines.

Team Paper: Approximately 30 - 40 minutes

1. The paper contains 15 problems of increasing difficulty. Team members are encouraged to collaborate when solving the problems and should decide on a strategy for sharing the work. It is unlikely that there will be enough time for everyone to do every question.

2. Final answers are to be written on the Team Paper Answer Sheet.

Crossnumber Puzzle: Approximately 20 - 30 minutes

1. The team should divide themselves into two pairs; one pair will take the across clues and the other pair will take the down clues. The team will write their answers on the shared Crossnumber Puzzle sheet as they work through the puzzle.

2. The crossnumber puzzle is designed so that some clues make it possible to find a number directly, some clues rely on an answer from another clue, and other clues require a partially completed puzzle board. Since each pair within a team is working on a different set of clues, the pairs will need to work together to completely solve the puzzle.

3. If teams are struggling to start the puzzle, teachers can direct them to across clues 12, 18, 24, and 25, or down clues 3, 11, 17, and 25.

Logic Puzzle: Approximately 20 - 30 minutes

1. Students use the clues to solve the puzzle. Note that the clues are not given in a specific order, and at times students will need to combine the information given in several different clues.

2. Students can work through the puzzle individually, in pairs, or as a team. Answer sheets are provided for all students so team members have the option to work individually and then compare their work in order to find a solution they all agree with.

3. Students are encouraged to use the answer sheet to write any information they know from the clues in order to help them reach the final answer.

4. If students are struggling to start the puzzle, teachers can direct them to clues 3 and 5.

5. Teams hand in only one Logic Puzzle Answer Sheet.

Relay: Approximately 5 - 10 minutes per relay

1. The "Practice Relay" is intended to be used as a practice round so students can understand the way the relay works. The questions in the Practice Relay are easier than the rest of the relay questions. Also, Player 1's questions are the easiest in all relays.

2. Each team member is assigned a number: 1, 2, 3, or 4. Each number corresponds to a specific problem in each relay. Players 2, 3, and 4 require the answer from Players 1, 2, and 3, respectively, to solve their problem. This is indicated in the problem with the phrase "Replace N below with the number you receive." However, Players 2, 3, and 4 should be able to do some work on their problem while they're waiting for the answer from their teammate.

3. The four team members should not see any of the relay problems in advance and should not talk to each other during the relay.

4. Before the relay starts, each student should have their relay problem face down in front of them. Player 1 should have the answer sheet.

5. Once the relay starts, all players can flip over their paper and start working on their problem. *Even Players 2, 3 and 4 should be able to do some work on their problem right away.*

6. When Player 1, Player 2, or Player 3 thinks they have the correct answer to their problem, they record their answer on the answer sheet and pass the sheet to the next player. Students should write only the numeric part of their answer and **not** include any units. When Player 4 thinks they have the correct answer to their problem, they record their answer on the answer sheet and wait for their teacher to check it.

7. If all four answers are correct, the relay is complete! Otherwise, the teacher will mark the relay as incorrect and pass the answer sheet back to Player 1 so the team can try again. The answer sheet has space for two attempts for each relay.

2025 Team Up Challenge

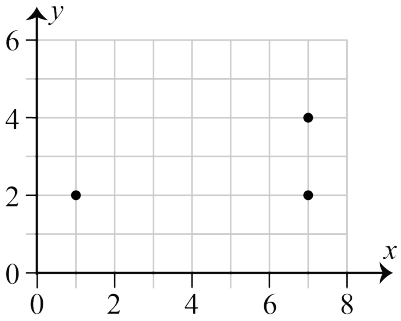
Team Paper

Tips to Get Started

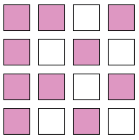
- The questions in this paper increase in difficulty as you move through the paper. The last few questions require some careful thought.
- Each team member doesn't need to do every question. You can split the questions up, work together, or do a combination of both. Come up with a strategy that works for your team.

1. If the temperature in Whitehorse is $-16°C$ and the temperature in Kitchener is $3°C$, how many degrees warmer is it in Kitchener than Whitehorse?

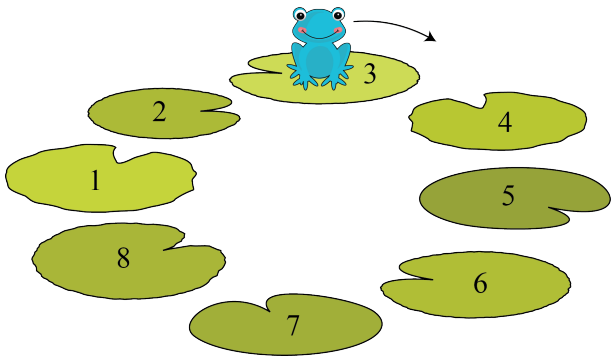
2. The coordinates of three of the vertices of a rectangle are $(1, 2)$, $(7, 2)$, and $(7, 4)$, as shown. What are the coordinates of the fourth vertex of the rectangle?



3. Sofia draws 16 identical small squares. Some of these squares are then shaded, as shown. How many more squares must be shaded so that 75% of the squares are shaded?



4. Eight lily pads are arranged in a circle. A frog hops from one lily pad to the next in a clockwise direction. The frog begins on lily pad 3, as shown.



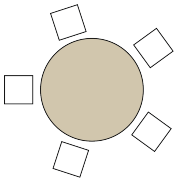
After 75 hops, which lily pad will the frog be on?

5. Each of the numbers 1, 2, 3, 4, and 5 is placed in exactly one of the boxes so that each of the five fractions is equal to an integer. Then, the five fractions are added together, as shown in the sum below.

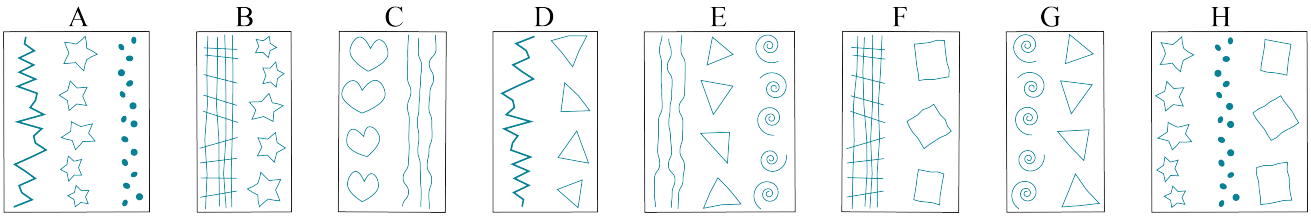
$$\frac{12}{\square}+\frac{13}{\square}+\frac{14}{\square}+\frac{15}{\square}+\frac{16}{\square}$$

What is the value of the sum?

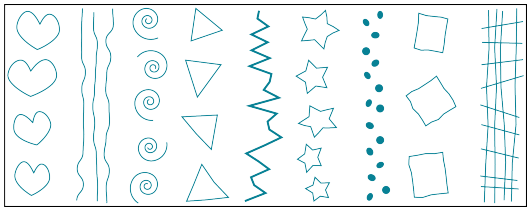
6. Adian, Bagus, Chandra, Daisuke, and Ebba are sitting around a circular table. Bagus sits in the chair between Adian and Daisuke. Ebba is not beside Daisuke. Which two people are sitting next to Ebba?



7. Ekain has eight strips of paper containing drawings, as shown.

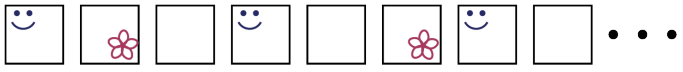


He takes some of these strips and arranges them side by side to create larger pictures. He can rotate the strips, but he cannot overlap them. Which strips did Ekain use to create the following picture?



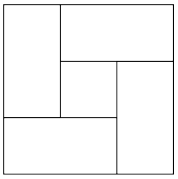
8. The operation ∇ is defined as $a \nabla b = 3a + b$. If $a \nabla 5 = 26$, what is the value of a?

9. There are 35 squares in a row. Ana draws a smiley face in the first square, and then in every third square after that. Sameer draws a flower in the second square, and then in every fourth square after that, as shown. How many squares will contain both a smiley face and a flower?



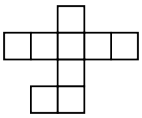
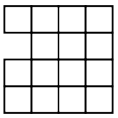
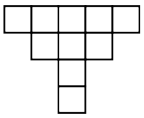
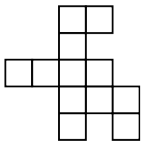
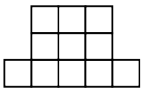
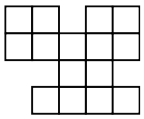
10. A *palindrome* is a positive integer that is the same when read forwards or backwards. For example, 545 and 3773 are both palindromes. Determine the largest five-digit palindrome whose digits have a sum of 15.

11. In the diagram, the outer square has an area of 144 cm^2, the inner square has an area of 16 cm^2, and the four rectangles are identical. Determine the perimeter of one of the four identical rectangles.



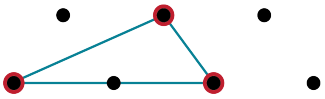
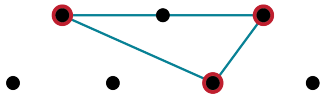
12. Vanessa has 30 red marbles, 30 blue marbles, and 30 green marbles. For each of the three colours, half of the marbles are sparkly. Vanessa places all of these marbles in a bag and randomly draws one. What is the probability that it is a sparkly green marble?

13. Triominoes are made of three squares and come in two shapes,  and  . By placing triominoes side by side, without overlapping them, it's possible to make some of the following patterns. Note that it is possible to rotate the triominoes. Which of the patterns can be made?

A 
B 
C 
D 
E 
F 

14. Seven points are arranged into two rows, with three points in the top row and four points in the bottom row, as shown.

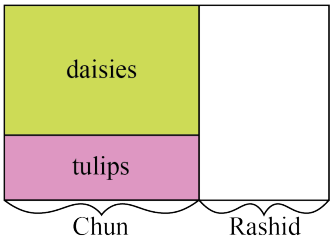
Julie chooses three points, with at least one point from each row, and connects the points with straight lines to form a triangle. Three triangles that Julie could form are shown.


Determine the total number of triangles that Julie can form.

15. Chun and Rashid share a rectangular garden. The ratio of the area of Chun's portion to the area of Rashid's portion is 3 : 2. They each plant daisies and tulips on their portion of the garden. On Chun's portion of the garden, the ratio of the area covered by daisies to the area covered by tulips is 2 : 1.

If half of the area of the entire garden is covered by daisies and half is covered by tulips, what is the ratio of the area covered by daisies to the area covered by tulips on Rashid's portion?



2025 Team Up Challenge

Team Paper Answer Sheet

Team: _____

Question	Answer
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

2025 Team Up Challenge

Crossnumber Puzzle

Across Clues

2. A number whose digits sum to 8.
4. A multiple of [2 ACROSS].
6. The area of a triangle with base [3 DOWN] and height [25 DOWN].
8. A number that is the product of two equal integers.
10. The mean of [1 DOWN] and [18 ACROSS].
12. The number of years in a decade.
13. A number whose tens digit is the mean of its other two digits.
15. A number that is the same when the digits are written in reverse order.
16. The product of three consecutive integers.
18. The sum of the numbers from 11 to 19, inclusive.
20. A factor of [17 DOWN].
22. The smallest whole number that is divisible by both 8 and [25 DOWN].
24. The perimeter of a triangle with side lengths 13, 21, and 25.
25. The positive difference between 987 and 234.
27. A number whose digits are three consecutive integers, in some order.
28. A prime number.

2025 Team Up Challenge

Crossnumber Puzzle

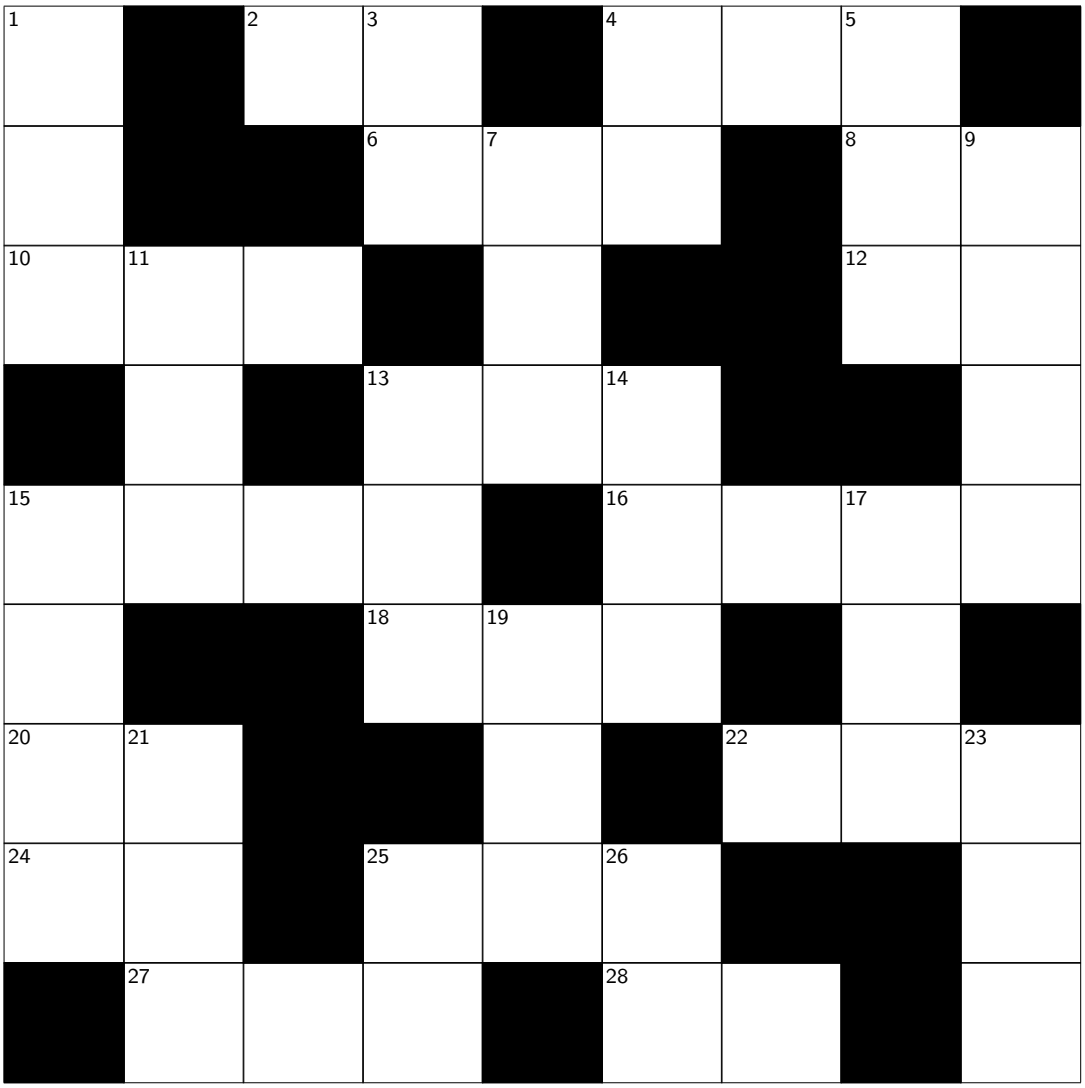
Down Clues

1. The area of a rectangle with length 24 ACROSS and width 3 DOWN.
3. The largest number that both 120 and 165 are divisible by.
4. A multiple of 9.
5. A number whose digits multiply to 36.
7. A number whose digits are the same as the digits of 27 ACROSS, but not necessarily in the same order.
9. A number that lies between 4025 and 4035 on the number line.
11. The number of apple fritters in a box containing 11 dozen.
13. The mean of the three digits in this number is 5.
14. This number appears in the sequence where the first term is 61 and each term after the first is 24 ACROSS more than the previous term.
15. The result when 4 ACROSS is multiplied by 3 DOWN and then added to 25.
17. The number that is 50% of 462.
19. The mode of the three digits of this number is 3.
21. The sum of the digits of this number is equal to the sum of the digits of 15 ACROSS.
23. The value of $7 +$ 6 ACROSS $- 1.5 \times 200$.
25. The number of quarters (worth \$0.25 each) needed to make \$19.50.
26. The positive difference between the two digits of this number is 6.

2025 Team Up Challenge

Crossnumber Puzzle

Team: _____



Tips to Get Started

- This puzzle is like a crossword puzzle, except that the answers are numbers instead of words. Each empty square in the puzzle is to be filled with one digit.
- Your team will work together, with some of you solving the across clues and some solving the down clues. Start by looking for clues that can be solved right away. Then move on to the clues that rely on an answer from another clue.

2025 Team Up Challenge

Logic Puzzle

Ami's Airport Taxi brought five passengers to the airport yesterday, each leaving on a different flight.

Using the clues below, determine the passenger name, destination, and purpose for travel for each of the departure times in the table on the next page.

(1) The five people are Helenka, Iveta, the person visiting family, the person going to Tokyo, and the person leaving at 5:15 p.m.

(2) Tuur left one hour after the person going to Rome, who was travelling for school.

(3) Mijo left at 1:15 p.m. and was going on vacation. He was *not* the person going to Halifax.

(4) Gaurav and Helenka were two of the passengers. Only one of them went to Vancouver.

(5) Two people were traveling for business. They left five hours apart and went to Vancouver and Paris, in some order.

Tips to Get Started

- You are encouraged to use the answer sheet to write any information you know from the clues in order to help you solve the puzzle. You may find it helpful to write the names, destinations, and purposes on sticky notes so you can move them around in the grid.
- Note that the clues are not given in a specific order, and at times you will need to combine the information given in several different clues.

2025 Team Up Challenge

Logic Puzzle Answer Sheet

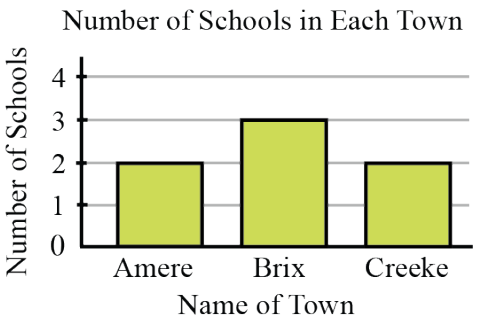
Team: _____

Fill in the table with the passenger name, destination, and purpose for travel for each of the given departure times.

Departure Time	Passenger's Name	Destination	Purpose
12:15 p.m.			
1:15 p.m.			
4:15 p.m.			
5:15 p.m.			
6:15 p.m.			

Practice Relay - Player 1

The number of schools in each of three towns is shown in the bar graph. What is the total number of schools in the three towns?



Practice Relay - Player 2

Replace N below with the number you receive.
Chef Carina puts 5 slices of ham on each of her pizzas. How many slices of ham are needed to make N pizzas?

You can start working on this question while you're waiting for Player 1's answer.

Practice Relay - Player 3

Replace N below with the number you receive.
The three angles in a triangle are $25°$, $N°$, and $x°$. What is the value of x?

You can start working on this question while you're waiting for Player 2's answer.

Practice Relay - Player 4

Replace N below with the number you receive.
Yusuf has 400 flyers to deliver. He delivers $\frac{1}{2}$ of them on Monday and then delivers N flyers on Tuesday. How many flyers are left to deliver after Tuesday?

You can start working on this question while you're waiting for Player 3's answer.

Relay A - Player 1

Points A, B, and C are on a number line. Point B is halfway between A and C. If A is at 5 and B is at 9, then where is C?

Relay A - Player 2

Replace N below with the number you receive.

If $x = 10$, then what is the value of $\dfrac{7 \times x}{2} - N$?

You can start working on this question while you're waiting for Player 1's answer.

Relay A - Player 3

Replace N below with the number you receive.

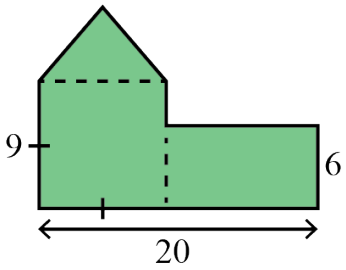
Evie has 60 marbles. Prakash has $\frac{3}{4}$ as many marbles as Evie. Gloria has N more marbles than Prakash. How many marbles do they have in total?

You can start working on this question while you're waiting for Player 2's answer.

Relay A - Player 4

Replace N below with the number you receive.

A shape can be divided into a triangle, a square, and a rectangle, as shown. If the total area of the shape is N, what is the area of the triangle?



You can start working on this question while you're waiting for Player 3's answer.

Relay B - Player 1

What number should be subtracted from 2 to give the result of -6?

Relay B - Player 2

Replace N below with the number you receive.
The first number in a sequence is a positive integer, and then each number after that is one more than the previous number in the sequence. If the 4^{th} and 5^{th} numbers add to 13, what is the N^{th} number in the sequence?

You can start working on this question while you're waiting for Player 1's answer.

Relay B - Player 3

Replace N below with the number you receive.
A number is multiplied by N and then 14 is added to that product, resulting in 134. What is the original number?

You can start working on this question while you're waiting for Player 2's answer.

Relay B - Player 4

Replace N below with the number you receive.
A box contains pears, apples, and oranges. There are N pears, 9 apples, and the number of oranges is one-third the number of apples. A fruit is randomly chosen from the box. What is the probability that the fruit is an apple?

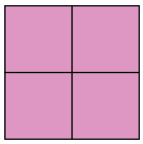
You can start working on this question while you're waiting for Player 3's answer.

Relay C - Player 1

Penny has $360 in $20 bills. How many $20 bills does she have?

Relay C - Player 2

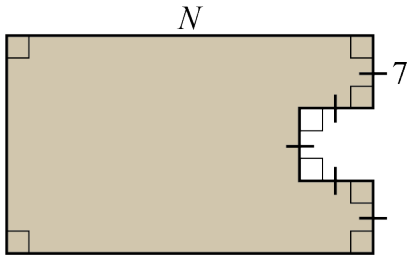
Replace N below with the number you receive.
A square is made up of four smaller squares, as shown. If each of the smaller squares has a perimeter of N, what is the perimeter of the larger square?



You can start working on this question while you're waiting for Player 1's answer.

Relay C - Player 3

Replace N below with the number you receive.
Determine the perimeter of the given shape.



You can start working on this question while you're waiting for Player 2's answer.

Relay C - Player 4

Replace N below with the number you receive.
Sevil and Marjatta started work on the farm at the same time. Sevil spent N minutes picking strawberries and then 55 minutes planting lettuce. Marjatta spent 2 hours and 15 minutes cleaning the stables and then 93 minutes feeding the animals. How many minutes before Marjatta did Sevil finish her work?

You can start working on this question while you're waiting for Player 3's answer.

2025 Team Up Challenge

Relay Answer Sheet

Team: _____

Practice Relay					
	Player 1	Player 2	Player 3	Player 4	Teacher
1st Attempt					
2nd Attempt					

Relay A					
	Player 1	Player 2	Player 3	Player 4	Teacher
1st Attempt					
2nd Attempt					

Relay B					
	Player 1	Player 2	Player 3	Player 4	Teacher
1st Attempt					
2nd Attempt					

Relay C					
	Player 1	Player 2	Player 3	Player 4	Teacher
1st Attempt					
2nd Attempt					