

The CENTRE for EDUCATION
in MATHEMATICS and COMPUTING
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2026 Team Up Challenge

June 2026

Answer Keys

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2026 Team Up Challenge

Team Paper Answer Key

Question	Answer
1	7
2	$\frac{1}{4}$ or 25%
3	C
4	1, 2, 3, 4, or 5
5	3
6	9
7	A, D, and E
8	12, 13, 14
9	20
10	6
11	C
12	60
13	78
14	66
15	134

2026 Team Up Challenge

Crossnumber Puzzle Answer Key

2	1	■	1	6	■	5	■	1
■	2	6	0	■	■	1	7	8
1	8	■	0	■	7	9	■	0
0	■	4	7	6	3	■	1	■
5	6	7	■	■	■	2	2	8
■	9	■	4	9	5	8	■	0
4	■	8	5	■	3	■	1	1
7	1	1	■	■	3	3	6	■
5	■	4	■	3	5	■	8	9

2026 Team Up Challenge

Logic Puzzle Answer Key

Name	Breed	Problem
Biscuit	husky	ate cake
Comet	poodle	ran away
Gizmo	dalmatian	barked
Rocky	golden retriever	stole Mochi's toy
Shadow	beagle	chased squirrels

2026 Team Up Challenge

Relay Answer Key

Practice Relay				
	Player 1	Player 2	Player 3	Player 4
Answer	8	22	10	110

Relay A				
	Player 1	Player 2	Player 3	Player 4
Answer	4	12	24	35

Relay B				
	Player 1	Player 2	Player 3	Player 4
Answer	16	12	8	256

Relay C				
	Player 1	Player 2	Player 3	Player 4
Answer	12	48	186	3836



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Solutions

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Team Paper

1. Since $3 \times 7 = 21$, it follows that $a = 7$.

ANSWER: 7

2. The numbers in the spinner that are divisible by 3 are 3 and 6. Thus, 2 of the 8 sections in the spinner contain a number that is divisible by 3. Therefore the probability that the arrow stops in a section containing a number that is divisible by 3 is $\frac{2}{8} = \frac{1}{4}$. As a percentage this is 25%.

ANSWER: $\frac{1}{4}$ or 25%

3. The perimeters of figures A, B, and D are all 10 cm. The perimeter of figure C is 12 cm. Thus, figure C has the greatest perimeter.

ANSWER: C

4. The smallest number of games Esha could have won is 1. In this case, Bahar would have won $11 - 1 = 10$ games. If Esha won 2 games, then Bahar would have won 9 games. If Esha won 3 games, then Bahar would have won 8 games. If Esha won 4 games, then Bahar would have won 7 games. If Esha won 5 games, then Bahar would have won 6 games. If Esha won 6 games, then Bahar would have won 5 games. However we are told that Esha won fewer games than Bahar, so Esha cannot have won more than 5 games. Thus, Esha could have won 1, 2, 3, 4, or 5 games.

ANSWER: 1, 2, 3, 4, or 5

5. Working backwards, we start by reflecting the translated umbrella over the vertical line through $(12, 0)$. This gives an umbrella with the tip at the point $(7, 7)$. This umbrella is also the result after translating the original umbrella to the right. Since the tip of the original umbrella is at the point $(4, 7)$, it must be translated 3 units to the right to $(7, 7)$.

ANSWER: 3

6. Since $2 + 3 = 5$, and $5 \times 3 = 15$, we should increase 2 and 3 each by a factor of 3. This gives $2 \times 3 = 6$ and $3 \times 3 = 9$. Then $6 : 9 = 2 : 3$ and $6 + 9 = 15$, as desired. Thus, the larger number is 9.

ANSWER: 9

7. Tabitha's box contains the following tiles:

   - One tile with 0 on both sides,
   - two tiles with 1 on one side and 2 on the other side,
   - one tile with 3 on one side and 4 on the other side, and

- two tiles with 5 on one side and 6 on the other side.

Box B does not contain any tiles with 0 on both sides, so could not be Tabitha's box of tiles.

Box C does not contain any tiles with 3 on one side and 4 on the other side, so could also not be Tabitha's box of tiles.

The remaining boxes, A, D, and E, contain the same tiles as Tabitha's box, so they could all be the box of tiles.

ANSWER: A, D, and E

8. We can ignore the `small` numbers and focus only on the `medium` and `large` numbers. From the instructions, we know that numbers classified as `medium` must be less than `x`. The number `x` and any numbers higher would all be classified as `large`.

   From the results, the largest number classified as `medium` is 11, and the smallest number classified as `large` is 14.

   Thus, `x` could be 12, 13, or 14.

ANSWER: 12, 13, 14

9. Adding the number of people who were at Monday's rehearsal with the number of people who were at Friday's rehearsal gives $15 + 12 = 27$. However, this includes the people who were at both rehearsals twice, as they were counted for both Monday's and Friday's rehearsals separately. Since 10 people were at both rehearsals, it follows that $27 - 10 = 17$ people were at either Monday's rehearsal, Friday's rehearsal, or both Monday's and Friday's rehearsals. Since 3 people missed both rehearsals, there are $17 + 3 = 20$ people in the choir.

ANSWER: 20

10. In this solution, we will call the die using the net shown on the left the *first die*, and the die using the net shown on the right the *second die*. There are two ways in which the numbers on the top faces are 1 and 3.

    - *Case 1*: The first die has 1 on its top face and the second die has 3 on its top face.
      In this case, the bottom faces of the first and second dice are 3 and 2, respectively. The sum of these numbers is $3 + 2 = 5$.
    - *Case 2*: The first die has 3 on its top face and the second die has 1 on its top face.
      In this case, the bottom faces of the first and second dice are 1 and 5, respectively. The sum of these numbers is $1 + 5 = 6$.

    Therefore, the maximum possible sum of the numbers on the bottom faces is 6.

ANSWER: 6

11. D represents a value of approximately 1.5 on the number line, while E is approximately 1.6. Then $D \div E$ is approximately equal to $1.5 \div 1.6 = 0.9375$. C is the only value on the number line that is slightly less than 1 and therefore best represents the value of $D \div E$.

ANSWER: C

12. *Solution 1*
Suppose the original numbers were 10, 10, and 42. Then their sum would be $10 + 10 + 42 = 62$. After multiplying by 6 we would obtain $62 \times 6 = 372$ for the correct answer.

The numbers Sebastian used were then 10, 10, and 32. Their sum is $10 + 10 + 32 = 52$. After multiplying by 6 Sebastian would have obtained $52 \times 6 = 312$.

The positive difference between the correct answer and Sebastian's answer is $372 - 312 = 60$.

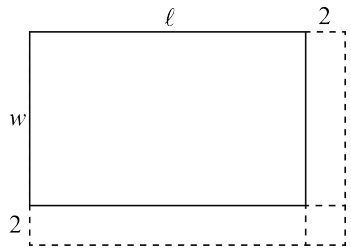
Solution 2
Let a, b, c represent the original numbers. Then, the expression $6(a + b + c)$, which can also be written as $6a + 6b + 6c$, represents the sum of the three numbers multiplied by 6.

Suppose $c = 42$. Then the expression $6a + 6b + 6 \times 42 = 6a + 6b + 252$ represents the correct answer. Since Sebastian used $c = 32$ instead, the expression $6a + 6b + 6 \times 32 = 6a + 6b + 192$ represents Sebastian's answer.

The positive difference between the correct answer and Sebastian's answer is $(6a + 6b + 252) - (6a + 6b + 192)$ which simplifies to $252 - 192 = 60$.

ANSWER: 60

13. Let ℓ and w represent the length and width, respectively, of the original rectangle. We extend the right side of the original rectangle to meet the bottom side of the new rectangle, and extend the bottom side of the original rectangle to meet the right side of the new rectangle. This divides the area of the new rectangle into four regions, as shown.



The areas of the four regions are ℓw, $2w$, 2ℓ, and 4.

The expression $2w + 2\ell + 4$ represents the increase in area, which is also 82, and so we have that $2w + 2\ell + 4 = 82$. Simplifying, we get $2w + 2\ell = 78$. Notice the expression $2w + 2\ell$ represents the perimeter of the original rectangle, and so the perimeter of the original rectangle is 78.

ANSWER: 78

14. For the sum to be a maximum, we must choose the three smallest divisors in an effort to make the fourth divisor as large as possible. The smallest three divisors of 360 are 1, 2, and 3, making $\frac{360}{1\times2\times3} = 60$ the fourth divisor. The sum of these four divisors is $1 + 2 + 3 + 60 = 66$.

    We note here that since 1, 2, and 3 are the smallest three different divisors of 360, any three other divisors of 360 would result in a fourth divisor that is smaller than 60.

    The next largest divisor, after 60, is 45, and so if we replace the divisor 60 with 45 then the remaining three divisors would have a product of $360 \div 45 = 8$. The three divisors are 1, 2, and 4. The sum of these four divisors is $1 + 2 + 4 + 45 = 52$, which is less than 66.

    Notice, that each time we replace the divisor 60 with a smaller divisor, the sum of the four divisors decreases. This is because the product of three different positive integers is always greater than or equal to their sum. For example, $1 \times 2 \times 4 = 8 > 1 + 2 + 4 = 7$. In the same way that we obtained a sum smaller than 66 by replacing the divisor 60 with the smaller divisor 45, if we replace 60 with other smaller divisors of 360, then the sum of the four divisors will be less than 66. Therefore, the maximum possible sum is 66.

    ANSWER: 66

15. To get the least number of small beads, we should use as many large beads as possible before adding a small bead. Since we can have at most 3 large beads in a row, we place 3 large beads, then 1 small bead. We repeat this pattern: 3 large, 1 small, 3 large, 1 small, ... This pattern repeats every 4 beads. Since $226 = 4 \times 56 + 2$, there are 56 complete groups of 4 beads, with 2 extra beads remaining. Each group contains 1 small bead, so there are $1 \times 56 = 56$ small beads. The remaining 2 beads can both be large beads (since we have not yet reached 3 in a row). Therefore, the smallest possible value of S is 56.

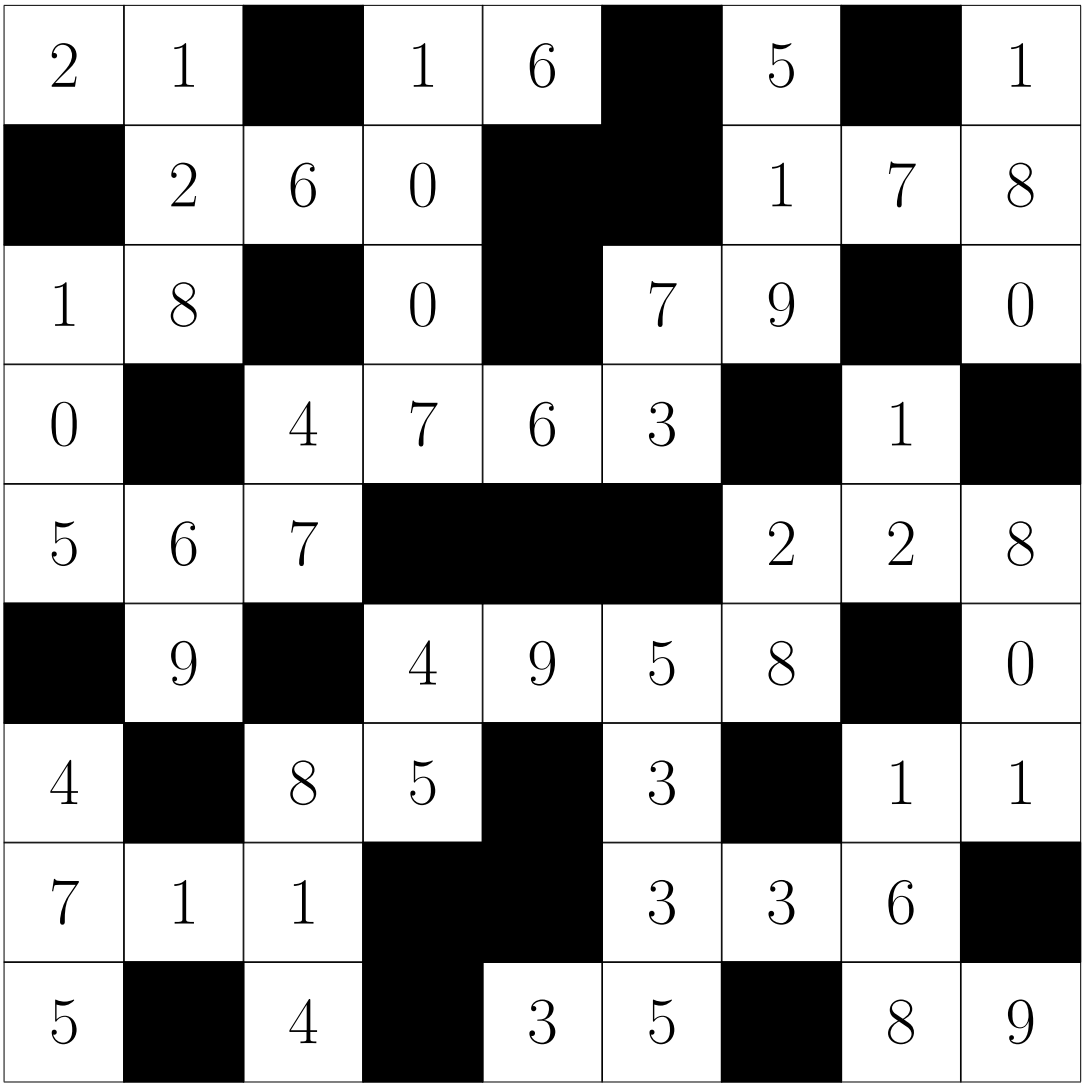
    To get the greatest number of small beads, we use as many small beads as possible before adding a large bead. Since we can have at most 5 small beads in a row, we place 5 small beads, then 1 large bead. We repeat this pattern: 5 small, 1 large, 5 small, 1 large, ... This pattern repeats every 6 beads. Since $226 = 6 \times 37 + 4$, there are 37 complete groups of 6 beads, with 4 extra beads remaining. Each group contains 5 small beads, giving $5 \times 37 = 185$ small beads. The remaining 4 beads can all be small beads (since we have not yet reached 5 in a row), so we add 4 more. This gives $185 + 4 = 189$ small beads. Therefore, the largest possible value of S is 189.

    Starting from the minimum arrangement, we can replace large beads with small beads one at a time while still following the rules. Each time we replace a large bead with a small bead, the number of small beads increases by 1, and we can continue doing this without breaking the restrictions until we reach the maximum arrangement.

    Therefore, every integer value between 56 and 189 (inclusive) is a possible value of S. As such, there are $189 - 56 + 1 = 134$ different values that S can have.

    ANSWER: 134

Crossnumber Puzzle



Across

1. The total number of dots is equal to $1 + 2 + 3 + 4 + 5 + 6 = 21$.

3. From the grid, the tens digit is 1. The only 2-digit number with a tens digit of 1 that is the product of two equal integers is 16.

6. From the grid, the hundreds digit is 2 and the ones digit is 0. Since the digits sum to $3 + 5 = 8$, it follows that the tens digit must be $8 - 2 - 0 = 6$. Thus the number is 260.

7. Since $\frac{2}{9} = \frac{178}{\boxed{801}}$, the number is 178.

8. The number of centimetres in $\boxed{180}$ millimetres is 18.

9. The only two digits that multiply to 63 are 7 and 9. Thus, the 2-digit integer could be either 79 or 97. The smaller of these is 79.

10. From the grid, the thousands digit is 4, the hundreds digit is 7, and the ones digit is 3. If the mean of the four digits is 5, then their sum must be 20. Since $20 - 4 - 7 - 3 = 6$, the tens digit must be 6. The number is 4763.

12. From the grid, the hundreds digit is 5 and the ones digit is 7. For the digits to be three consecutive integers, the tens digit must be 6. The number is 567.

14. The perimeter of a square is equal to 4 times its side length. Thus, the perimeter of this square is equal to $4 \times 57 = 228$.

16. The thousands digit must be 4. From the grid, the tens digit is 5 and the ones digit is 8, and so to lie between 4860 and 4960 on the number line, the hundreds digit must be 9. The number is 4958.

19. From the grid, the ones digit is 5. In the sequence with the first term $\boxed{228}$ where each term after the first is 13 less than the previous term, there is only one 2-digit number with a ones digit of 5. It is 85.

20. The only prime factors of 209 are 11 and 19. The smaller of these is 11.

21. The area of the triangle is $\frac{1}{2} \times \boxed{18} \times \boxed{79} = 711$.

22. There are 24 hours in a day and 14 days in two weeks. Thus, there are $24 \times 14 = 336$ hours in two weeks.

23. As a product of prime factors, $105 = 3 \times 5 \times 7$ and $175 = 5 \times 5 \times 7$. Thus, the largest number that both 105 and 175 are divisible by is $5 \times 7 = 35$.

24. The positive factors of $\boxed{801}$ are $1, 3, 9, 89, 267$, and 801. From the grid, this is a two-digit number with a tens digit of 8. The number is 89.

Down

2. From the grid, the hundreds digit is 1 and the ones digit is 8. The only multiple of $\boxed{16}$ with a hundreds digit of 1 and a ones digit of 8 is 128.

3. $1700 - 100 + 1$ is the same as $1700 - 99$ and so $1700 - 700 + 7 = 1007$ is equal to $1700 - 7(99)$. The smallest 4-digit number in the sequence is thus 1007, since the next number in the sequence will be less than 1000. 6

4. From the grid, the tens digit is 1 and the ones digit is 9. The median of these two digits is 5. Thus, the hundreds digit is 5 and the number is 519.

5. The sum of the interior angles of a triangle is $180°$.

8. The smallest 3-digit multiple of 7 is $7 \times 15 = 105$.

9. From the grid, the tens digit is 7. Since the positive difference between the two digits is 4, the only possibility for the ones digit is $7 - 4 = 3$. Thus the number is 73.

10. Since 470 is the largest multiple of 10 less than $\boxed{475}$ and $47 \times 10 = 470$, there are 47 positive multiples of 10 less than $\boxed{475}$.

11. The top face and bottom face of a rectangular prism each have 4 edges. There are then 4 edges connecting the top and bottom faces. Thus, there are $4 \times 3 = 12$ edges in total.

13. From the grid, the tens digit is 6. Since $13 \times 13 = 169$ and $169 - 100 = 69$, the ones digit must be 9. The number is 69.

14. Since the area of a rectangle is equal to length $\times$ width, the length of a rectangle is equal to area $\div$ width. Thus, the length equals $\boxed{336} \div \boxed{12} = 28$

15. From the grid, the hundreds digit is 8 and the ones digit is 1. Since this number contains the same digits as $\boxed{180}$, the number is 801.

16. The sum is $1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 = 45$, or $\frac{9 \times 10}{2} = 45$.

17. From the grid, the tens digit is 3 and the ones digit is 5. Since this number is the same when written in reverse order, the number must be 5335.

18. 95% of $100 = 95$, so 95% of $500 = 95 \times 5 = 475$.

19. From the grid, the hundreds digit is 8 and the tens digit is 1. Since the digits sum to 13, it follows that the ones digit must be $13 - 8 - 1 = 4$. Thus the number is 814.

20. The result of $\boxed{180} - \boxed{12} = 168$.

Logic Puzzle

We start by filling in the table with the names of the five dogs. Then we consider clues (1) and (6):

(1) Rocky, the golden retriever, did not bark at all during the party.

(6) Biscuit ate the entire cake.

In addition to knowing that Rocky is the golden retriever and Biscuit ate the cake, we can deduce that since Rocky didn't bark nor eat the cake (because Biscuit did), that Rocky must have stolen Mochi's toy, chased squirrels, or ran away.

The following partially-completed table contains the information we know so far.

Name	**Breed**	**Problem**
Biscuit		ate cake
Comet		
Gizmo		
Rocky	golden retriever	*stole Mochi's toy / chased squirrels / ran away*
Shadow		

Next we consider clues (2) and (4):

(2) Comet and the beagle like to run. One of them chased the squirrels and the other ran away.

(4) Shadow did not bark and was not the dog who ran away.

From this, we know that Comet and Shadow didn't bark. Also, from clues (1) and (6) we know that Biscuit and Rocky didn't bark. It follows that Gizmo must have been the dog who barked.

The beagle either chased squirrels or ran away, so Biscuit and Gizmo are not the beagle. Also, since Rocky is the golden retriever and Comet is not the beagle, it follows that Shadow must be the beagle. We also know Shadow did not run away, and since the beagle either ran away or chased squirrels, we conclude that Shadow must have chased squirrels.

Since the beagle (Shadow) chased squirrels it follows that Comet ran away. It then follows that Rocky must have stolen Mochi's toy.

The following partially-completed table contains the information we know so far.

Name	**Breed**	**Problem**
Biscuit		ate cake
Comet		ran away
Gizmo		barked
Rocky	golden retriever	stole Mochi's toy
Shadow	beagle	chased squirrels

Next we consider clues (3) and (5):

(3) Biscuit isn't the dalmatian and Gizmo isn't the husky.

(5) The poodle did not eat cake and did not bark at the party.

Since Biscuit ate the cake and Gizmo barked, they cannot be the poodle, and so Comet is the poodle. It then follows that Biscuit is the husky and Gizmo is the dalmatian.

This completes the logic puzzle.

Name	**Breed**	**Problem**
Biscuit	husky	ate cake
Comet	poodle	ran away
Gizmo	dalmatian	barked
Rocky	golden retriever	stole Mochi's toy
Shadow	beagle	chased squirrels

Relay

(Note: Where possible, the solutions are written as if the value of N is not initially known, and then N is substituted at the end.)

Practice Relay

P1: When 394 is doubled, the ones digit becomes $4 + 4 = 8$.

P2: The perimeter of the triangle is $6 + 8 + N = 14 + N$.
Since the answer to the previous question is 8, then $N = 8$, and so the perimeter of the triangle is $14 + 8 = 22$.

P3: If $x = 4$, then the value of $N - 3x$ is $N - 3(4) = N - 12$.
Since the answer to the previous question is 22, then $N = 22$, and so the value of $N - 12$ is $22 - 12 = 10$.

P4: If a family with 1 adult and 2 children go swimming 1 time, it will cost $\$5 + \$3 + \$3 = \$11$.
If they go swimming N times, it will cost $\$11 \times N$.
Since the answer to the previous question is 10, then $N = 10$, and so the total cost will be $\$11 \times 10 = \$110$.

Answer: 8, 22, 10, 110

Relay A

P1: From the graph, the number of volunteer hours for the four people is 4, 2, 5, and 5. The average (mean) number of hours per person is then $\frac{4+2+5+5}{4} = \frac{16}{4} = 4$.

P2: If a machine produces 180 items in 60 seconds, then it produces $180 \div 60 = 3$ items per second. Thus, in N seconds, it would produce $3 \times N$ items.
Since the answer to the previous question is 4, then $N = 4$, and so the machine would produce $3 \times 4 = 12$ items.

P3: Since AC is a straight line, $\angle ABC = 180°$. Thus $x = 180 - 90 - 54 - N$, so $x = 36 - N$.
Since the answer to the previous question is 12, then $N = 12$, and so $x = 36 - 12 = 24$.

P4: Since Manish is 5 years older than Delma, and Delma is 6 years older than Ravi, it follows that Manish is $5 + 6 = 11$ years older than Ravi. Thus, if Ravi is N years old, then Manish is $N + 11$ years old.
Since the answer to the previous question is 24, then $N = 24$, and so Manish is $24 + 11 = 35$ years old.

Answer: 4, 12, 24, 35

Relay B

P1: Since $\frac{1}{2} = \frac{15}{30}$, then if $\frac{c}{30} > \frac{15}{30}$, it follows that $c > 15$. So the smallest possible integer value of c is 16.

P2: Let x be the third number. Then $3 \times N \times x = 576$, so $N \times x = 576 \div 3 = 192$, and then $x = 192 \div N$.
Since the answer to the previous question is 16, then $N = 16$, and so $x = 192 \div 16 = 12$.

P3: We can look at the number of coins earned and lost separately. The total number of coins earned is $15 + 5 = 20$. The total number of coins lost is $8 + 10 + 6 = 24$. Since Raili's character started with N coins, then after earning 20 coins and losing 24 coins it would have $N + 20 - 24 = N - 4$ coins.
Since the answer to the previous question is 12, then $N = 12$, and so Raili's character had $12 - 4 = 8$ coins.

P4: The area of each triangle is $\frac{1}{2} \times N \times N$. Since there are 8 shaded triangles in total, the area of the shaded part is $8 \times \frac{1}{2} \times N \times N = 4 \times N \times N$.
Since the answer to the previous question is 8, then $N = 8$, and so the area of the shaded part is $4 \times 8 \times 8 = 256$.

Answer: 16, 12, 8, 256

Relay C

P1: Since the point was translated to the right, only its x-value changed. The x-value started at -4 and after the translation it was 8. Thus, the point was translated $8 - (-4) = 8 + 4 = 12$ units to the right.

P2: If Rose has finished $\frac{3}{4}$ of the tasks on her list, then the remaining tasks, N, represent $\frac{1}{4}$ of the original number of tasks. It follows that the original number of tasks is equal to $4 \times N$.
Since the answer to the previous question is 12, then $N = 12$, and so there were $4 \times 12 = 48$ tasks on Rose's list to start with.

P3: The total amount of string needed is $N + (30 \times 3) + N$, which simplifies to $2N + 90$.
Since the answer to the previous question is 48, then $N = 48$, and so he will need $2 \times 48 + 90 = 96 + 90 = 186$ millimetres of string.

P4: First we convert everything to grams. So the empty backpack has a mass of 1.1 kg = 1100 g, and the water bottle has a mass of 1.8 kg = 1800 g. Thus, the total mass of the filled backpack, in grams, is $1100 + 750 + 1800 + N = 3650 + N$.
Since the answer to the previous question is 186, then $N = 186$, and so the total mass is $3650 + 186 = 3836$ g.

Answer: 12, 48, 186, 3836