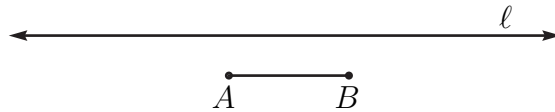


Co-op, Page 1: Team answers must be on the *coloured* page.
 Answers on a white page will not be graded.

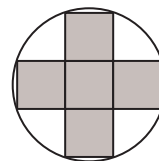
1. Line segment AB is 3 cm long. Line ℓ is parallel to AB and 1 cm from AB . In how many ways can we choose a point P on line ℓ so that $\triangle ABP$ is isosceles? 1. _____ ways



2. There are exactly two integers n between 10 and 99 such that the last two digits of n^2 are (in order) the same as the two digits of n . What is the sum of these two integers? (Note that 11 is not such an integer, because $11^2 = 121$.) 2. _____

3. How many 3-letter “words” can be made using letters chosen from the letters in “CANADA”? For example, “ADN” is an acceptable word, as are “AAA” and “DAA”. But “NCC” is not acceptable, since it has two C’s while “CANADA” has only one. 3. _____ words

4. In the diagram below, the cross (shaded) is constructed using 5 identical squares. The cross is inscribed in a circle of radius 6. What is the area of the cross? 4. _____ units²

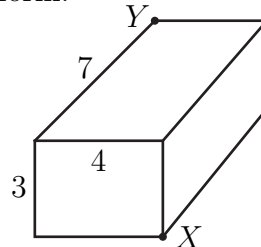


Co-op, Page 2: Team answers must be on the *coloured* page.
Answers on a white page will not be graded.

5. How many integers between 100 and 999 divide 96^2 ? 5. _____ integers

6. How many integers between 100 and 1000 have no 1's and no 2's in their decimal representation? 6. _____ integers

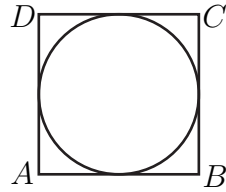
7. The diagram below shows a $3 \times 4 \times 7$ rectangular box. What is the length of the shortest path on the surface of the box from point X to point Y ? Give your answer in the form \sqrt{N} , where N is an integer. For example, an answer of $\sqrt{172}$ is of the right form. 7. _____ units



Co-op, Page 3: Team answers must be on the *coloured* page.

Answers on a white page will not be graded.

8. In the diagram below, a circle of radius greater than 9 cm is inscribed in the square $ABCD$. A point P on the circle is 8 cm from side AB of the square, and 9 cm from side AD . What is the radius of the circle? 8. _____ cm



9. The positive integer n will be called *fat* if n is divisible by every positive integer which is less than or equal to \sqrt{n} . How many fat positive integers are there? 9. _____

10. Define $A(n, i)$ by $A(n, i) = n^i - n^{i-1}$. Find the sum of all values of $A(n, i)$, as n ranges over the 10 integers from 1 to 10, and i independently ranges over the 3 integers from 1 to 3. 10. _____