Reference: 301-040011-003

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Press Release on the 2005 PSLE Mathematics Paper

1.   In the 2005 PSLE Mathematics paper, there was a flaw in one of the questions. Question 13 is a multiple choice question, worth 2 marks.

2   The question is as follows:

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13   The figure below shows a rectangle 15 cm by 6 cm.
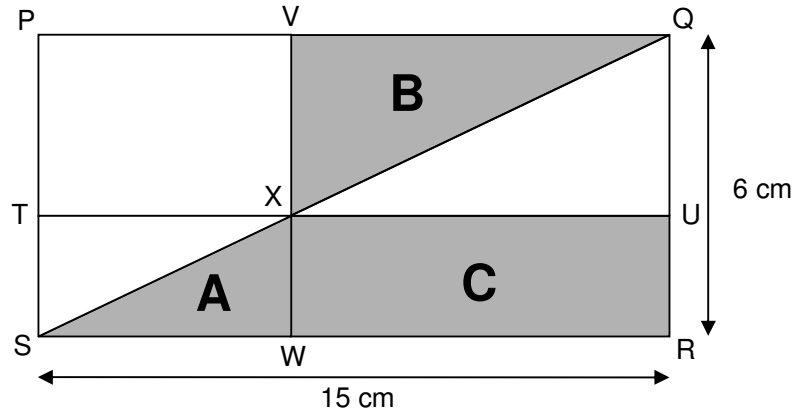The area of Triangle A is 4 cm^2 and the area of Triangle B is 16 cm^2.

What is the area of Rectangle C?

(1)   20 cm^2
(2)   22 cm^2
(3)   25 cm^2
(4)   28 cm^2

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3   While the answer can be worked out using the data given, there is a flaw in the question. The flaw lies in the inconsistency between dimensions of the rectangle and the areas of triangles A and B. Based on the data given, it is mathematically not possible to draw such a figure. This is further explained in the Annex.

4   SEAB will award 2 marks to all students, irrespective of their response.

5   SEAB is sorry about the error in this question.

Solving the problem using the data given

Area of Triangle QXU   = Area of Triangle VXQ
                               = Area of Triangle **B**
                               = 16 cm^2

Area of Triangle QSR   = ½ (SR) x (QR)
                               = ½ (15 x 6) cm^2
                               = 45 cm^2

Area of Rectangle **C**
       = Area of Triangle QSR – Area of Triangle XSW – Area of Triangle QXU
       = Area of Triangle QSR – Area of Triangle **A** – Area of Triangle **B**
       = (45 – 4 – 16) cm^2
       = 25 cm^2

Where the flaw lies

The flaw can be seen if students check for the accuracy of the answer. One of the ways is to find the area of Rectangle PVXT. An example is as follows:

Area of Rectangle PVXT
       = Area of Rectangle PQRS – (Area of Rectangle TXWS + Area of Rectangle XURW
         + Area of Rectangle VQUX)
       = (90 – (8 + 25 + 32)) cm^2
       = 25 cm^2

However, if we compare the ratios of the 4 rectangles, i.e. if we use

$$\frac{\text{Area of Rectangle PVXT}}{\text{Area of Rectangle VQUX}} = \frac{\text{Area of Rectangle TXWS}}{\text{Area of Rectangle XURW}}$$

we get $\dfrac{\text{Area of Rectangle PVXT}}{32} = \dfrac{8}{25}$

giving   Area of Rectangle PVXT $= \dfrac{8}{25} \times 32$ cm^2
                                    = 10.24 cm^2 and not   25 cm^2

Hence, the dimensions of the rectangle in the question are mathematically inconsistent.

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