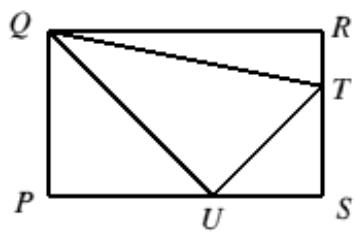




16.  $PQRS$  is a rectangle. The area of triangle  $QRT$  is  $\frac{1}{5}$  of the area of  $PQRS$ , and the area of triangle  $TSU$  is  $\frac{1}{8}$  of the area of  $PQRS$ . What fraction of the area of rectangle  $PQRS$  is the area of triangle  $QTU$ ?

- A  $\frac{27}{40}$       B  $\frac{21}{40}$       C  $\frac{1}{2}$       D  $\frac{19}{40}$       E  $\frac{23}{60}$



- 
16. **E** Let  $QR = x$  and  $RS = y$  in the rectangle  $PQRS$ . Hence the area of  $PQRS$  is  $xy$ . The area of triangle  $QRT$  is  $\frac{1}{2}RT \times x = \frac{1}{5}xy$ , hence  $RT = \frac{2}{5}y$ . Thus  $TS = RS - RT = \frac{3}{5}y$ . The area of triangle  $TSU$  is  $\frac{1}{2}SU \times \frac{3}{5}y = \frac{1}{8}xy$ , hence  $SU = \frac{5}{12}x$ . Therefore the area of triangle  $PUQ$  is  $\frac{1}{2} \times \frac{7}{12}xy = \frac{7}{24}xy$ . Hence, as a fraction of the area of rectangle  $PQRS$ , the area of triangle  $QTU$  is

$$\frac{xy(1 - \frac{1}{5} - \frac{1}{8} - \frac{7}{24})}{xy} = \frac{23}{60}$$