

4 JEE Main 2021 (Online) 16th March Evening Shift

MCQ (Single Correct Answer)

Let $A = \{2, 3, 4, 5, \dots, 30\}$ and ' \simeq ' be an equivalence relation on $A \times A$, defined by $(a, b) \simeq (c, d)$, if and only if $ad = bc$. Then the number of ordered pairs which satisfy this equivalence relation with ordered pair $(4, 3)$ is equal to :

A 5

B 6

C 8

D 7

Explanation

$$ad = bc$$

$$(a, b) R (4, 3) \Rightarrow 3a = 4b$$

$$a = \frac{4}{3}b$$

b must be multiple of 3

$$b = \{3, 6, 9, \dots, 30\}$$

$$(a, b) = \{(4, 3), (8, 6), (12, 9), (16, 12), (20, 15), (24, 18), (28, 21)\}$$

\Rightarrow 7 ordered pair