A number y varies jointly as x and the cube of z. If $y = 160$ when $x = 4$ and $z = 2$ what is y when $x = -5$ and $z = 3$?

Solution:

If y varies jointly as x and the cube of z it means that

$$y = A * x * z^3$$

From $y = 160,\ x = 4,\ z = 2$ we can find value of A

$$A = \frac{y}{x * z^3} = \frac{160}{4 * 8} = 5$$

For $x = -5\ and\ z = 3$

$$y = 5 * (-5) * 3^3 = -675$$

Answer: -675