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54. With rightward positive for the block and clockwise negative for the wheel (as is conventional), then we note that the tangential acceleration of the wheel is of opposite sign from the block's acceleration (which we simply denote as a); that is, $a_t = -a$. Applying Newton's second law to the block leads to

$$P - T = ma \qquad \text{where } m = 2.0 \text{ kg} .$$

Applying Newton's second law (for rotation) to the wheel leads to

$$-TR = I\alpha \qquad \text{where } I = 0.050 \text{ kg} \cdot \text{m}^2 .$$

Noting that $R\alpha = a_t = -a$, we multiply this equation by R and obtain

$$-TR^2 = -Ia \implies T = a\,\frac{I}{R^2} .$$

Adding this to the above equation (for the block) leads to

$$P = \left(m + \frac{I}{R^2}\right) a .$$

Thus, $a = 0.92 \text{ m/s}^2$ and therefore $\alpha = -4.6 \text{ rad/s}^2$, where the negative sign should not be mistaken for a deceleration (it simply indicates the clockwise sense to the motion).