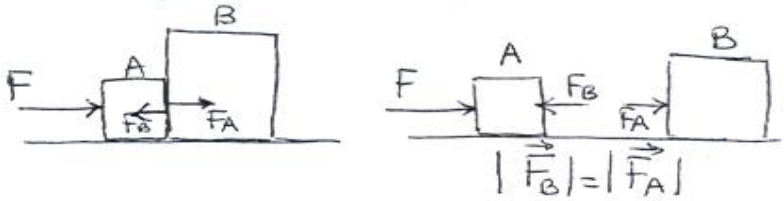
2.8 m/s**2
3.3 m/s**2
5.4 m/s**2
1.8 m/s**2

The horizontal surface on which the objects (Fig 7) slide is frictionless. If the magnitude of the force of the small block on the large block is 5.2 N, determine F.

7.8 N
9.0 N
4.8 N
4.1 N
6.0 N



$F_A = m_B a$

$\Rightarrow a = \frac{5.2}{4} = 1.3 \frac{m}{s^2}$

$F - F_B = m_A a$

$F = F_B + m_A a$

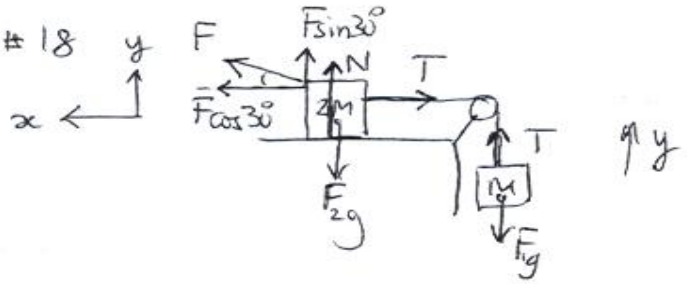
$= 5.2 + 2 \times 1.3$

$= 7.8\,N$

Three blocks are placed on a table as shown in Fig (8). The table exerts a normal force:

only on block C.
only on block A.
upward on block B and downward on block C.
upward on block A and downward on block C.
only on block B.

#18



Mass M: $T - F_{1g} = Ma$ (y-axis) — (1)

Mass 2M: x-axis $F\cos 30^\circ - T = 2Ma$ — (2)

y-axis $F\sin 30^\circ + N - F_{2g} = 0$

(1) $\Rightarrow T = Ma + F_{1g} = Ma + Mg$

(2) $\Rightarrow F\cos 30^\circ - (Ma + Mg) = 2Ma$

$F\cos 30^\circ - Mg = 3Ma$

$\Rightarrow a = \frac{F\cos 30^\circ - Mg}{3M} = \frac{40\cos 30^\circ - 2 \times 9.8}{3 \times 2} = 2.5 \frac{m}{s^2}$