Blocks attached by cords solutions

1. ΣF4 = 4a = T

ΣF5= 5a = Fpull

 9a = 30 N; a = 3.33 m/s/s; T = 4a = 13.3 N

1. ΣF15 = 15 a = 15 g – T

ΣF25 = 25 a = T – *f* *f* = μmg = 61.25 N

40 a = 15 g; a = 2.14 m/s/s; T = 25 a + *f* = 53.5 N + 61.25 = 114.8 N

1. ΣF4.2 = T

ΣF3.5 = 3.5 g – T

7.7 a = 3.5 g; a = 4.45 m/s/s ; T = 4.2 a = 18.7 N

1. ΣF3.5= 3.5 a = 3.5 g – T

ΣF1.5 = 1.5 a = T

5.0 a = 3.5 g ; a = 34.3 / 5 = 6.86 m/s/s; T = 1.5 a = 10.3 N

1. ΣF15 = 15 a = 15g – T

ΣF9  = 9 a = T – 9 g

24 a = 6 g; 58.8/ 24 kg = 2.45 m/s/s

9(2.45) + 9(9.8) = T = 110.25 N

1. ΣF5 = 5 a = 5g – T

ΣF3 = 3 a = T – 3 g

8(a) = 2 g = 2.45 m/s/s T = 3 a + 3g = 36.75 N

Block 5 drops 1.6 m while block 3 goes up 1.6 m. at the time block 5 hits the ground, block 3 is travelling at vf2 = 2ax or [(2)(2.45)(1.6)]1/2 =

Vf = 2.8 m/s up. After block 5 hits the ground, block 3 is moving up at 2.8 m/s and will begin to slow down until it stops

vf2 = vo2 + 2ax yields a height of

2.82/19.6 = 0.40 m. The 3 kg block is now at a height of 1.6 + 1.6 + 0.4, or 3.6 m (max height)