

## Chapter 3

21. 196N

22. 17 N

23. 566 N

24. 128 kg

25.  $5.01 \times 10^3$  N,  $1.04 \times 10^3$  N

26. a) 617.4 N

b) 2.4 m

27.  $3.56 \times 10^3$  N

28. 1.1 kg

29. 75 N [left]

31. a) 0.5 m from  $m_1$ , 1.5 m from  $m_2$   
b) 39.2 N
32.  $F_1 = 1.1 \times 10^3$  N [down],  
 $F_2 = 1.6 \times 10^3$  N [up]
33. 0.75 m [right], 1.25 m [up]
34. 1.25 m
35.  $3.3 \times 10^2$  kg
36. 0.95 m from centre on  
17.0-kg side
37. 29.4 N, 39.2 N
38. Front legs:  $1.05 \times 10^2$  N each,  
back legs:  $4.4 \times 10^1$  N each
39. a) 196 N [up]  
b) 34.2 N [out horizontally]
40.  $2.7 \times 10^2$  N
41. a)  $3.1 \times 10^2$  N  
b) 1.2 m
42.  $7.8 \times 10^2$  N [up]
43. 0.29 m
44.  $1.9 \times 10^3$  N [up],  
 $2.5 \times 10^3$  N [down]
45. 0.75 N, 0.25 N
46.  $9.5 \times 10^2$  N
47.  $26^\circ$
48. 1.73 m
49. 5.2 cm ( $21.8^\circ$ )
50.  $26.6^\circ$
51.  $1.6 \times 10^3$  N/m
52.  $1.88 \times 10^4$  N/m
53. 25.4 kg
54. a)  $7.5 \times 10^2$  N  
b)  $1.7 \times 10^{-2}$  m
55. a)  $9.8 \times 10^{-8}$   
b)  $2.0 \times 10^{-7}$  m  
c)  $1.7 \times 10^6$  kg
56.  $8.32 \times 10^4$  N
57.  $3.95 \times 10^7$  N/m
58.  $7.1 \times 10^8$  N·m
59. a)  $2.5 \times 10^{-2}$  m  
b)  $3.01 \times 10^{-4}$
60. a) Stress:  $6.67 \times 10^5$  N/m<sup>2</sup>,  
strain:  $6.67 \times 10^{-5}$   
b)  $2.0 \times 10^{-4}$  m
61. 22.000 0775 m