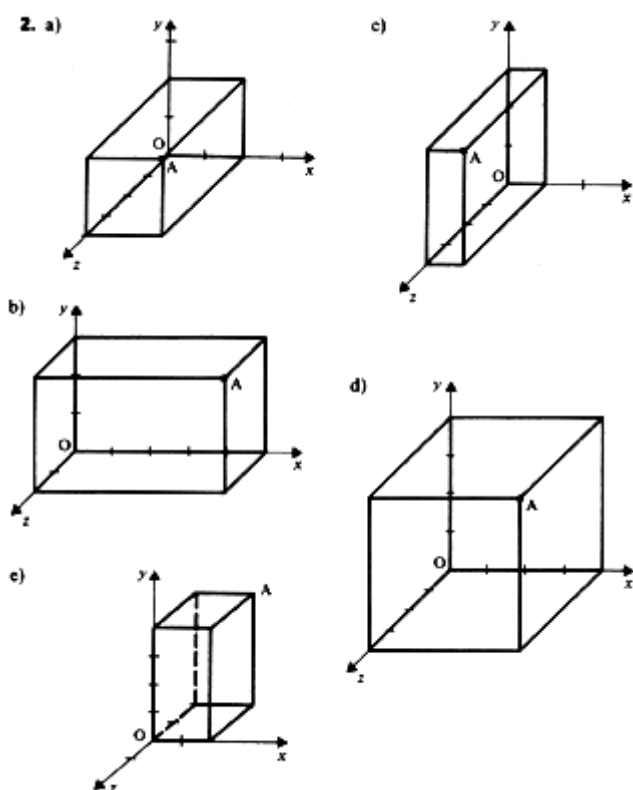


CHAPTER 22 Coordinates in Three Dimensions

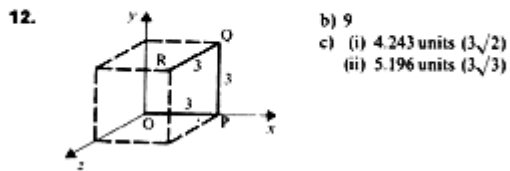
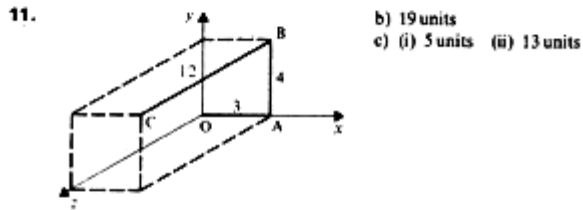
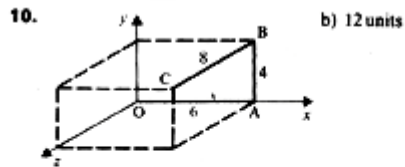
We strongly recommend that in this exercise liberal use is made of squared paper, models and a set of identical cubes.

EXERCISE 22a (p. 381)

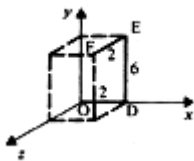
1. a) (3, 2, 1) b) (3, 3, 3) c) (5, 2, 1) d) (2, 4, 2) e) (2, -1, 2) f) (-3, 2, 3)



3. P(0, 2, 2), Q(1, 2, 2), R(1, 3, 1), S(2, 2, 1), T(3, 1, 2), U(3, 1, 0),
V(0, 0, 2), W(1, 3, 0)
4. A(3,3,2), B(2,3,1), C(-1, 3, 3), D(-1, 3, 0), E(3, 2, 3), F(3, 0, 1)
5. a) O(0, 0, 0), A(0, 3, 3), B(3, 3, 3), C(3, 3, 0), D(0, 3, 0), E(0, 0, 3)
F(3, 0, 3), G(3, 0, 0)
- b) (i) $(3, 3, 1\frac{1}{2})$ (ii) $(3, 1\frac{1}{2}, 3)$ (iii) $(1\frac{1}{2}, 3, 0)$ (iv) $(0, 3, 1\frac{1}{2})$
- c) (i) $(1\frac{1}{2}, 1\frac{1}{2}, 3)$ (ii) $3, 1\frac{1}{2}, 1\frac{1}{2}$ (iii) $(1\frac{1}{2}, 3, 1\frac{1}{2})$
6. a) (2, 0, 3) b) (2, 6, 3) c) (2, 0, 0)
7. O(0, 0, 0), A(4, 0, 0), D(4, 0, 4), C(0, 0, 4) G(0, 4, 4), E(4, 4, 4) B(0, 4, 0), F(4, 4, 0)
8. O(0, 0, 0), A(4, 0, 0), B(0, 6, 0), C(0, 0, 2), G(0, 6, 2), F(4, 6, 0), D(4, 0, 2)
9. a) A(-5, 4, 0), C(3, 4, 2) D(-5, 4, 2), E(-5, 0, 0), F(3, 0, 0),
G(3, 0, 2), H(-5, 0, 2)
- b) (i) (-1, 4, 0) (ii) (-1, 4, 2)



13.



b) 10

c) (i) 6.325 units ($2\sqrt{10}$)

(ii) 6.633 units ($2\sqrt{11}$)

14. a) $(0, -3, 3)$ b) $(3, -3, 3)$ c) $(3, 0, 3)$