1. Draw the Archimedean tilings.   [15 marks]

a. $(3^3 . 4^2)$

b. $(3^2.4.3.4)$

c. $(4. 8^2)$

d. $(3. 12^2)$

e. $(3.4.6.4)$

f. $(4.6.12)$

g. $(3.6.3.6)$
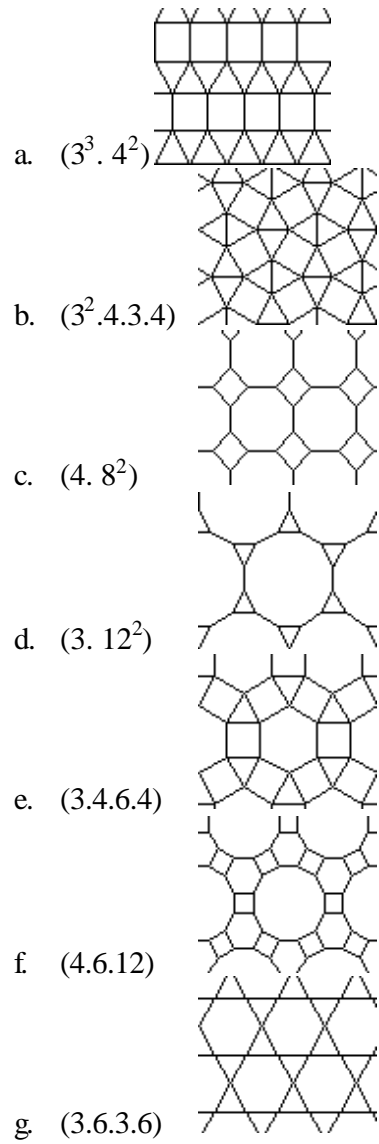
h. $(3^4.6)$ in both left and right versions.
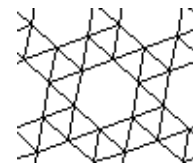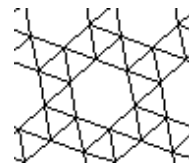
2. Complete the table for the Platonic and Archimedean solids.   [44 marks]

	Vertices	Edges	Faces	Shape of face	Degree of vertex
Tetrahedron	4	6	4	3	3
Cube	8	12	6	4	3
Octahedron	6	12	8	3	4
Dodecahedron	20	30	12	5	3
Icosahedron	12	30	20	3	5
Truncated tetrahedron	12	18	4	6	3
			4	3	
Truncated cube	24	36	6	8	3
			8	3	
Truncated octahedron	24	36	8	6	3
			6	4	
Truncated dodecahedron	60	90	12	10	3
			20	3	
Truncated icosahedron	60	90	20	6	3
			12	5	
Cuboctahedron	12	24	6	4	4
			8	3	
Great rhombicuboctahedron	48	72	6	8	3
			8	6	
Rhombicuboctahedron	24	48	12	4	4
			8	3	
			18	4	
Icosidodecahedron	30	60	12	5	4
			20	3	
Great rhombicosidodecahedron	120	180	12	10	3
			20	6	
			30	4	
Rhombicosidodecahedron	60	120	12	5	4
			20	3	
			30	4	
Snub cube	24	60	6	4	5
			32	3	
Snub dodecahedron	60	150	12	5	5
			80	3	

3. Use the chart in Attachment 1 to determine the symmetry type of the frieze
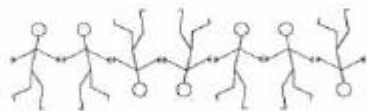   patterns below.   [7 marks]

(a)

(b)
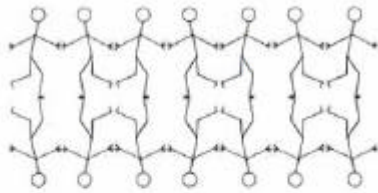
(c)
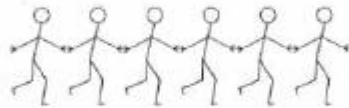
(d)

(e)
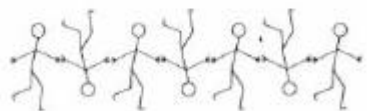
(f)

(g)
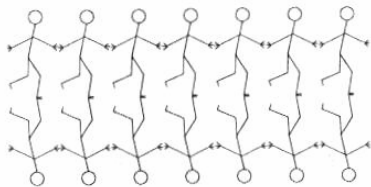
a: pm11, b: pmm2, c: p111, d: pma2, e: p1a1, f: p112, g: p1m1

4. Use the chart in Attachment 2 to determine the symmetry type of the wallpaper
    patterns below.   [34 marks]

      a. p1

      b. cmm

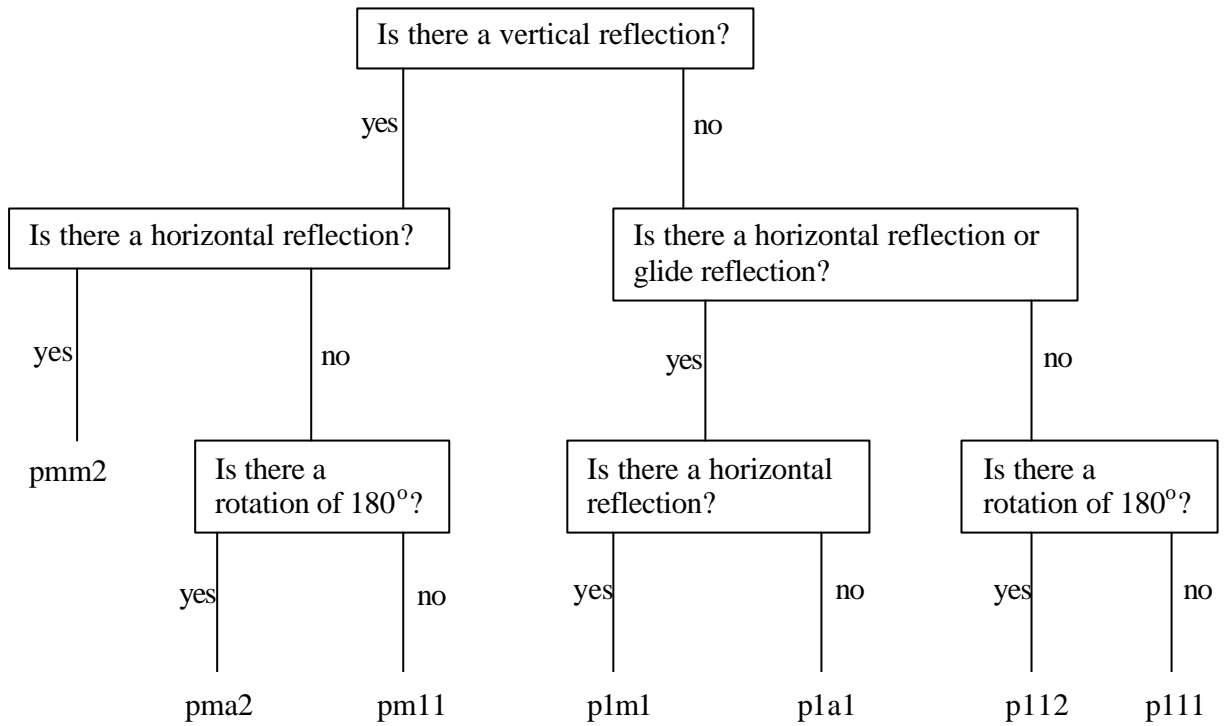   c. p4

      d. pg

      e. cm

      f. pgg

      g. p2

      h. pmm

      i. pmg

      j. pm

      k. p3

      l. p31m

      m. p4g

      n. p4m

      o. p6

      p. p3m1

      q. p6m
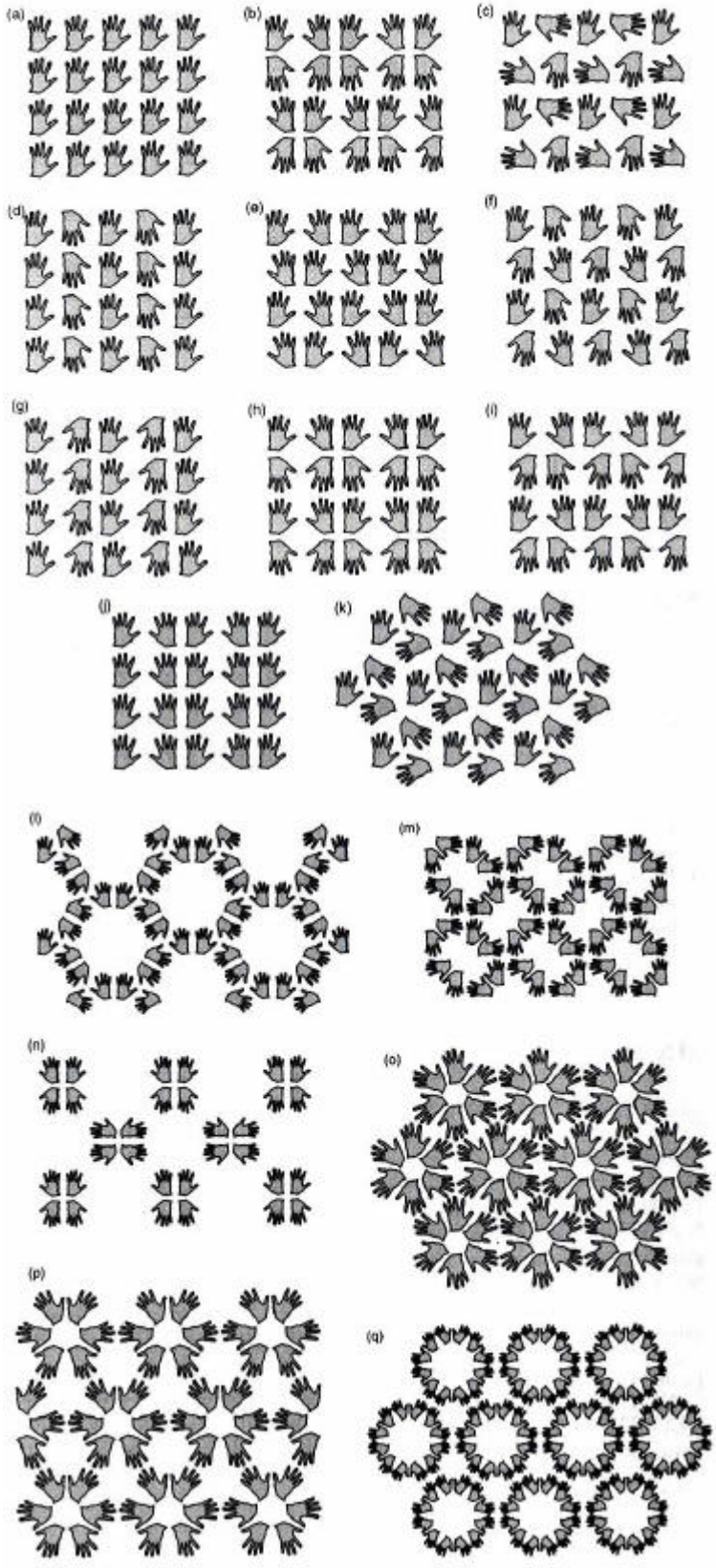
Attachment 1: Flow chart for frieze patterns.

```
                        ┌─────────────────────────────┐
                        │ Is there a vertical reflection? │
                        └─────────────────────────────┘
                     yes │                    │ no
          ┌──────────────────────────┐   ┌──────────────────────────────┐
          │ Is there a horizontal reflection? │   │ Is there a horizontal reflection or │
          └──────────────────────────┘   │ glide reflection?              │
       yes │              │ no            └──────────────────────────────┘
                                           yes │                │ no
      pmm2          ┌──────────────┐   ┌──────────────────┐   ┌──────────────┐
                    │ Is there a   │   │ Is there a horizontal │   │ Is there a   │
                    │ rotation of 180°? │   │ reflection?         │   │ rotation of 180°? │
                    └──────────────┘   └──────────────────┘   └──────────────┘
                 yes │        │ no      yes │        │ no      yes │        │ no

               pma2        pm11        p1m1        p1a1        p112        p111
```

Attachment 2: Flow chart for wallpaper patterns.