



Problem of the Week

Problem B and Solution

Fraction Action

Problem

For this activity, you will need a set of pattern blocks, as shown above.

- a)(i) Suppose that the large yellow hexagonal pattern block represent one whole. Use your pattern blocks to discover what fraction is represented by each of the other three shapes listed below.
Hexagon = $\underline{1}$; Blue Rhombus = $\underline{\quad}$; Green Triangle = $\underline{\quad}$; Red Trapezoid = $\underline{\quad}$.
- (ii) What is the total value of the collection of four shapes listed in part i)?
- (iii) Using the values from part i) and as many of each of those four shapes as needed, make a collection of shapes with total value $2\frac{5}{6}$.
- b)(i) Suppose that the Blue Rhombus is now worth only $\frac{1}{6}$. What fraction would each of the shapes now represent?
Hexagon = $\underline{\quad}$; Blue Rhombus = $\underline{\frac{1}{6}}$; Green Triangle = $\underline{\quad}$; Red Trapezoid = $\underline{\quad}$.
- (ii) Using these new values, make a collection of shapes with total value $2\frac{2}{3}$.

Solution

- a) i) Hexagon = 1, Blue Rhombus = $\frac{1}{3}$, Green Triangle = $\frac{1}{6}$, Red Trapezoid = $\frac{1}{2}$
ii) The total value of the 4 shapes in part i) is

$$1 + \frac{1}{3} + \frac{1}{6} + \frac{1}{2} = 1 + \frac{2}{6} + \frac{1}{6} + \frac{3}{6} = 1 + \frac{6}{6} = 2,$$

i.e., the shapes assembled together would make 2 complete hexagons.

- iii) Answers may vary. To make $2\frac{5}{6}$ we could use:

- 2 Hexagons + 5 Triangles
- 2 Hexagons + 2 Rhombi + 1 Triangle
- 2 Hexagons + 1 Rhombus + 3 Triangles
- 2 Hexagons + 1 Trapezoid + 2 Triangles
- 2 Hexagons + 1 Trapezoid + 1 Rhombus

etcetera...

- b) i) If the blue rhombus is now only worth $\frac{1}{6}$, i.e., half its original value, then so is each other piece. So the hexagon is worth $\frac{1}{2}$, the green triangle is worth $\frac{1}{12}$ and the red trapezoid is worth $\frac{1}{4}$.
- ii) Answers will vary but when rearranged would cover 5 complete hexagons and a blue rhombus. Here are some possibilities:
- 5 Hexagons + 1 Rhombus
 - 4 Hexagons + 4 Rhombi
 - 4 Hexagons + 2 Trapezoids + 1 Rhombus
 - 3 Hexagons + 4 Trapezoids + 1 Rhombus
 - 16 Rhombi
 - 32 Triangles
- etcetera...

