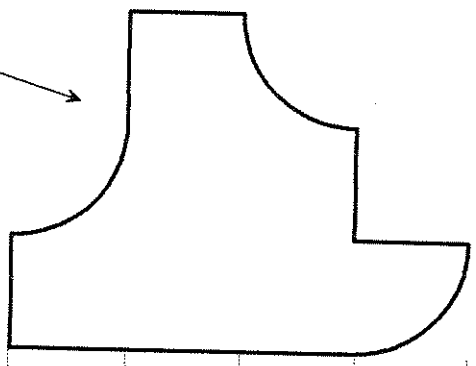
Sheet E1 Shapes with the same Area

Find three tiles which can be put together to make this shape.



Its area is $8x - y$.

Satisfy yourself that this is correct.

Now make three *different* shapes (a), (b) and (c), each with area $8x - y$. Draw them below.

There is a *quick* way of finding the three shapes. Did you find it?

Did you realise that *any* arrangement using the same three tiles B, C, and D would do?

Did you think of using *Tile A* instead of Tile B, because you knew it had the *same area?*

Sheet E2 Comparing Areas of Tiles

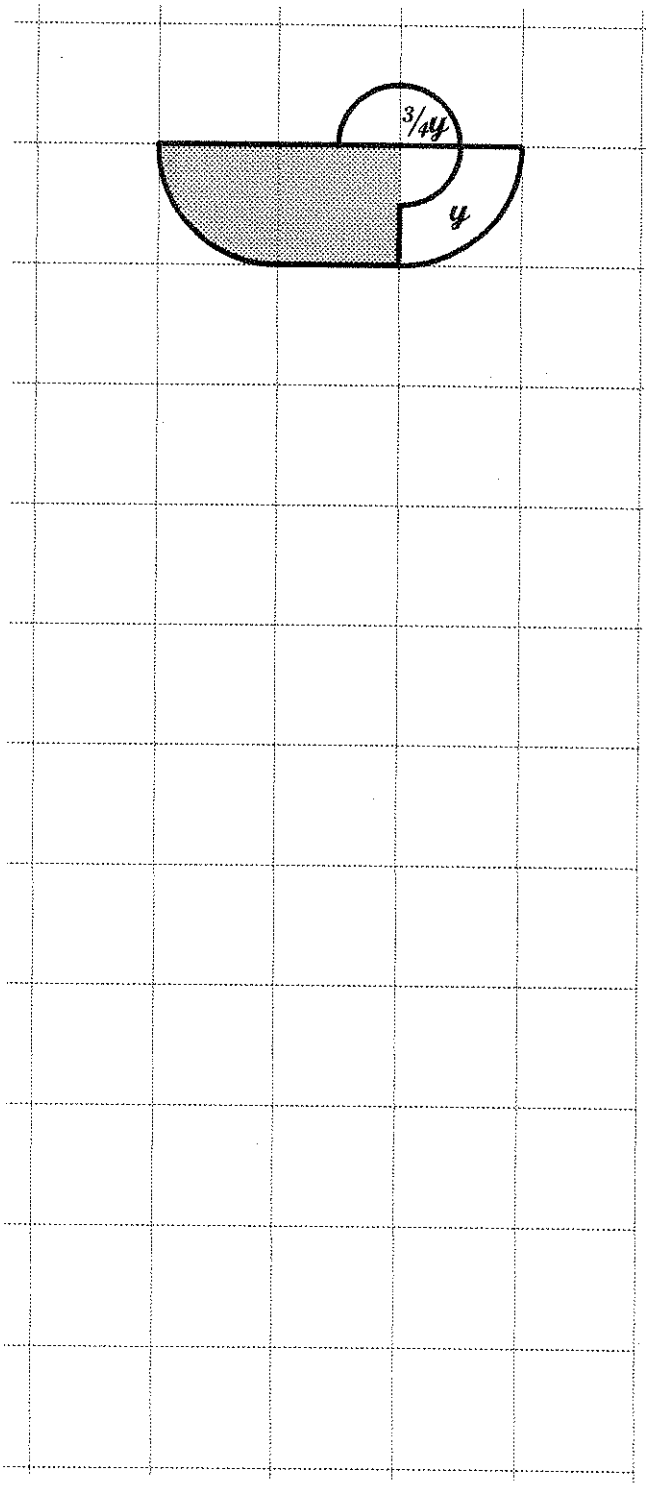
Suppose we want to compare two tiles to see by how much one is bigger.

We use the symbol ~ to mean *'compare'*.
For example '$a \sim f$' means
'The difference between the areas of A and F'.

If 'sh/a' means 'the shaded area', then placing F on top of A, we see that:

$$a \sim f$$
$$\text{sh/a} + y \sim \text{sh/a} + \tfrac{3}{4}y$$
or $$y \sim \tfrac{3}{4}y$$
$$\tfrac{1}{4}y \sim 0.$$

So **shape A is greater in area by $\frac{1}{4}y$.**



In the same way, compare the areas of
1. C and E.

$$c \sim e$$

2. G and H.

$$g \sim h$$

3. F and G,

$$f \sim g$$

Show in a diagram the shaded area each time. Show your working.
Check all your results to make sure they are right.

Sheet E3 Shapes Using Algebra

The areas of the tiles are given on the right.
Pick out two of them that can be put together to make a shape P, with area

$$p = 6x - 2y$$

Now do the same for shapes Q, R, S and T where

$$q = 5x$$

$$r = 5x - \tfrac{1}{4}y$$

$$s = 5x - \tfrac{1}{2}y$$

$$t = 3x + 2\tfrac{1}{2}y$$

Can you make a shape U, where $u = 7x$?

$a = x + 2y$ →

$b = x + 2y$ →

$c = 4x - 2y$ →

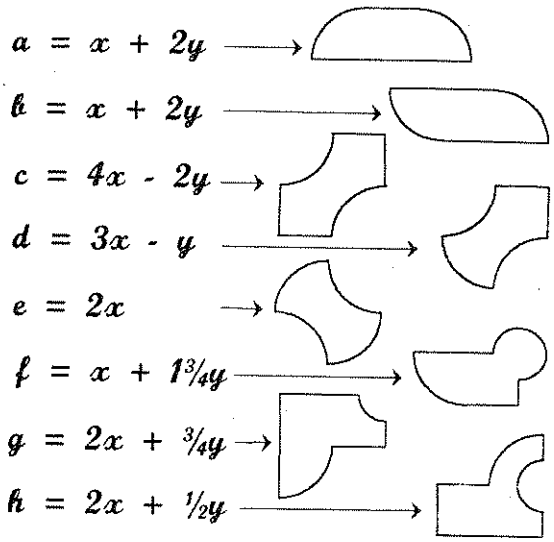
$d = 3x - y$ →

$e = 2x$ →

$f = x + 1\tfrac{3}{4}y$ →

$g = 2x + \tfrac{3}{4}y$ →

$h = 2x + \tfrac{1}{2}y$ →



Draw all these shapes below, showing how the tiles fit.

Sheet E4 The Final Task

The areas of the individual tiles are given opposite.

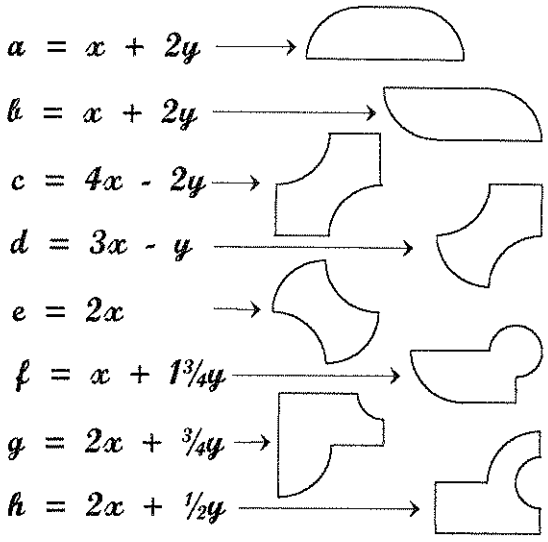
They will help you to work out this problem. But you may have to think very carefully!

Using three of the tiles, make up an attractive shape (call it V) such that:

$$v = 5x + 3y.$$

Now out of the five *remaining* tiles of the set, make up *another* nice shape W, such that:

$$w = v$$



Draw them both below, showing which tiles you used, and how you put them together.

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Each square is the same size as the shape named ***x***.
The sheet can help you work out the area of each shape.
You might trace the shapes and then remove them to work out the area.