

Sample Responses to Discuss: Anya

Imagine you are Anya's teacher. Describe how Anya approached the problem.

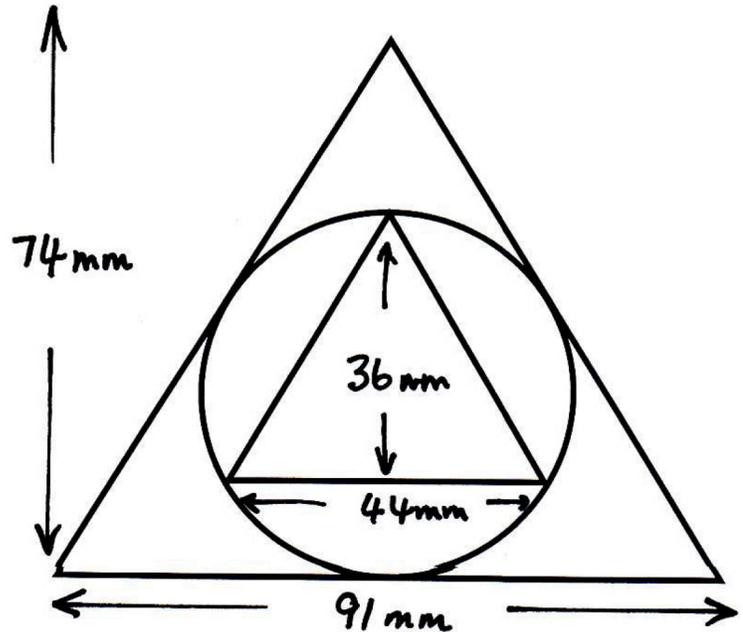
Write your explanation on a separate sheet.

What do you like/dislike about the work?

What is unclear about the work?

What questions would you like to ask Anya?

This diagram shows a circle with one equilateral triangle inside and one equilateral triangle outside.



1. Calculate the ratio of the areas of the two triangles.
Show all your work.

$$\Delta = \frac{1}{2} \cdot 74 \cdot 91 = 3367$$

$$\Delta = \frac{1}{2} \cdot 36 \cdot 44 = 792$$

$$\text{Ratio} = \frac{3367}{792} = 4.25$$

Sample Responses to Discuss: Bill

Imagine you are Bill's teacher. Describe how Bill approached the problem.

Write your explanation on a separate sheet.

What do you like/dislike about the work?

What is unclear about the work?

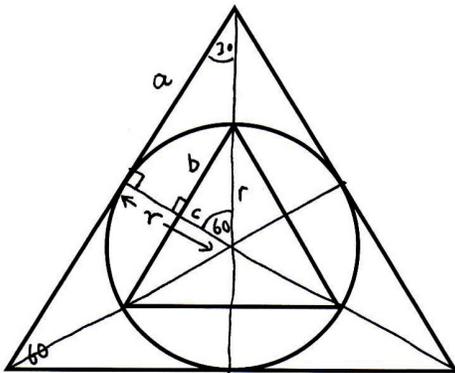
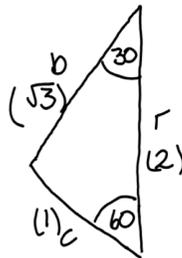
What questions would you like to ask Bill?

This diagram shows a circle with one equilateral triangle inside and one equilateral triangle outside.

$$\frac{c}{r} = \frac{1}{2} \quad c = \frac{r}{2}$$

$$\frac{b}{r} = \frac{\sqrt{3}}{2} \quad b = \frac{r\sqrt{3}}{2}$$

$$a = r\sqrt{3}$$



1. Calculate the ratio of the areas of the two triangles.
Show all your work.

$$\text{Area of small triangle} = 6 \times \frac{1}{2} \times b \times c = 6 \times \frac{1}{2} \times \frac{\sqrt{3}}{2} \times \frac{r}{2} = \frac{3r^2\sqrt{3}}{4}$$

$$\text{Area of large triangle} = 6 \times \frac{1}{2} \times a \times r = 3 \times r\sqrt{3} \times r = 3r^2\sqrt{3}$$

Sample Responses to Discuss: Carla

Imagine you are Carla's teacher. Describe how Carla approached the problem.

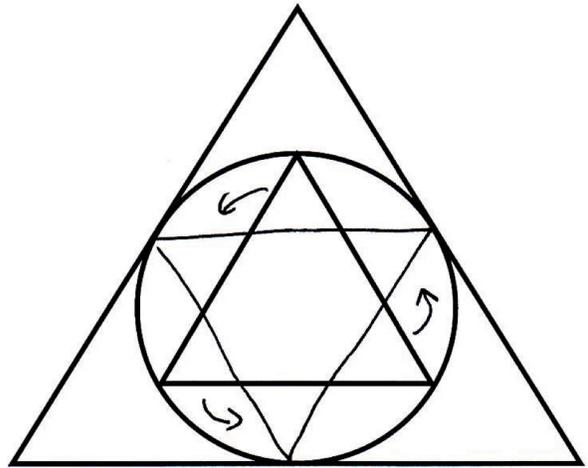
Write your explanation on a separate sheet.

What do you like/dislike about the work?

What isn't clear about the work?

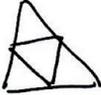
What questions would you like to ask Carla?

This diagram shows a circle with one equilateral triangle inside and one equilateral triangle outside.

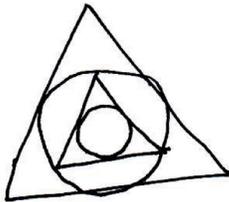


1. Calculate the ratio of the areas of the two triangles.
Show all your work.

Spin the little triangle.

You get  So big area : small area = 4 : 1

2. Draw a second circle inscribed inside the small triangle.
Find the ratio of the areas of the two circles.



Big triangle + big circle is enlargement of small triangle + small circle.

So ratio of big circle to small circle = 4 : 1

Sample Responses to Discuss: Darren

Imagine you are Darren's teacher. Describe how Darren approached the problem.

Write your explanation on a separate sheet.

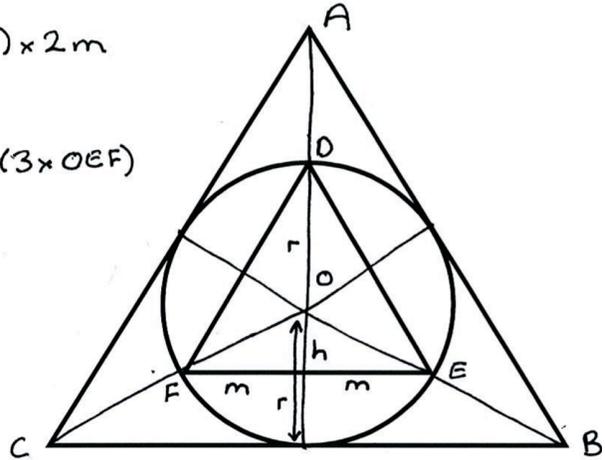
What do you like/dislike about the work?

What is unclear about the work?

What questions would you like to ask Darren?

This diagram shows a circle with one equilateral triangle inside and one equilateral triangle outside.

$$\begin{aligned} \text{Area } DEF &= \frac{1}{2} \times (h+r) \times 2m \\ &= m \times (h+r) \\ &= 3 \times \frac{1}{2} \times h \times 2m \quad (3 \times OEF) \\ h+r &= 3h \\ h &= \frac{r}{2} \end{aligned}$$



1. Calculate the ratio of the areas of the two triangles.
Show all your work.

Triangle OEF is similar to triangle OBC.
The height of OBC is double the height of OEF,
so CB is double EF.
It follows that the area of OBC is
double \times double - four times bigger than OEF.
Area ABC : Area DEF = $3 \times$ OBC : $3 \times$ OEF = 4 : 1