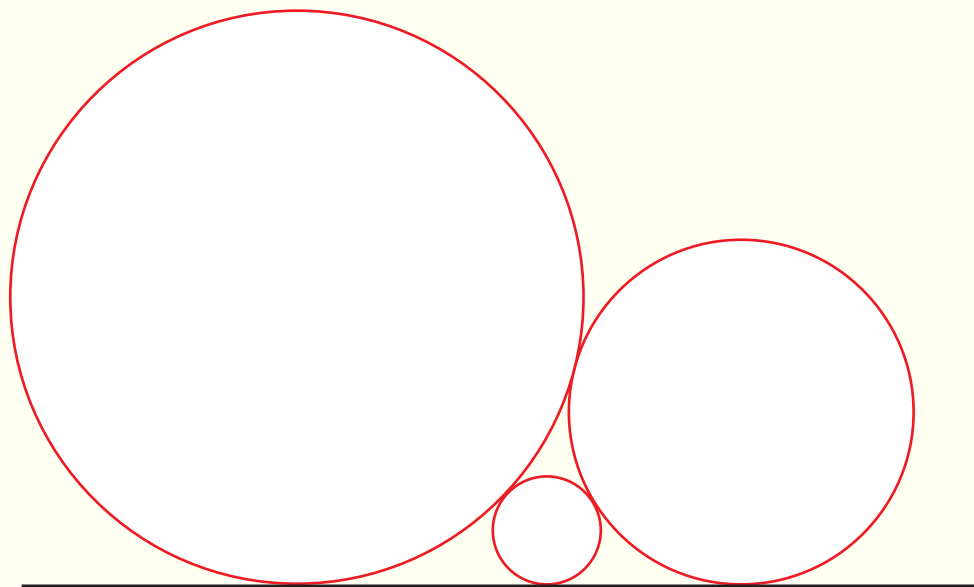


MATHS PROBLEM NO. 1

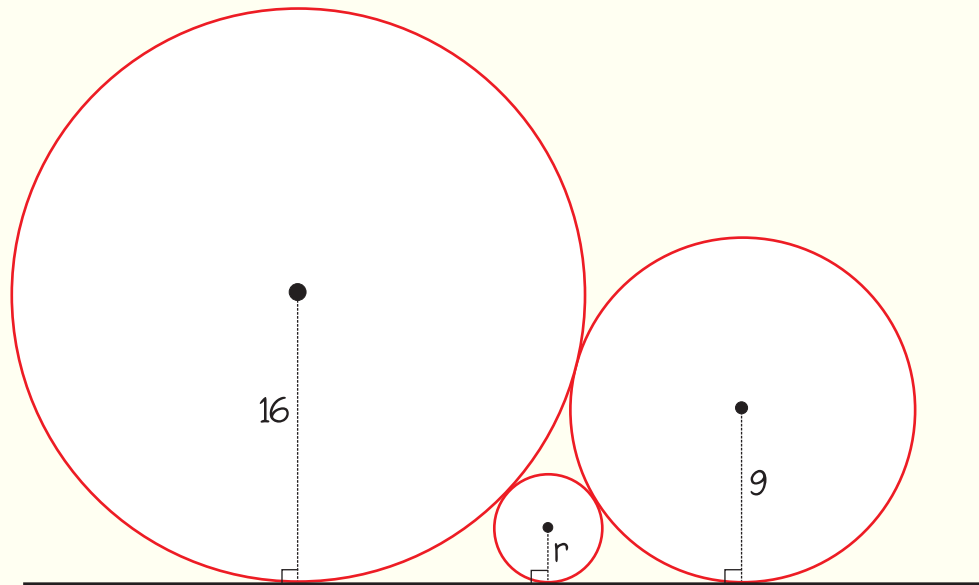
Chloe had three wheels from bikes and things that she stacked against the shed. Each wheel fitted so neatly together that Chloe took this photo. Now the radius of the largest wheel was 16 cm and the radius of the middle-sized wheel was 9 cm. What was the radius of Chloe's smallest wheel?



MATHS PROBLEM No. 1

Chloe had three wheels from bikes and things that she stacked against the shed. Each wheel fitted so neatly together that Chloe took this photo. Now the radius of the largest wheel was 16 cm and the radius of the middle-sized wheel was 9 cm. What was the radius of Chloe's smallest wheel?

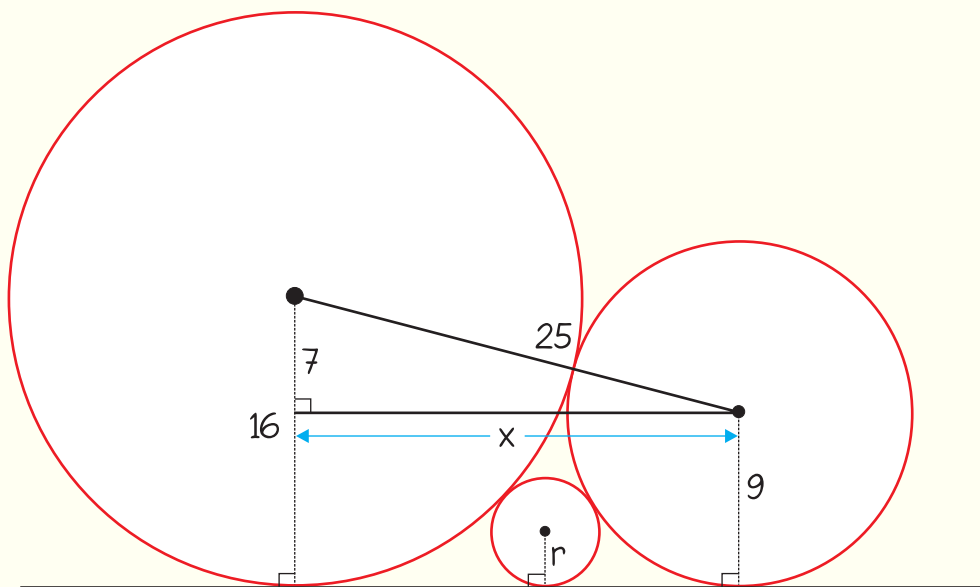
SOLUTION



MATHS PROBLEM NO. 1

Chloe had three wheels from bikes and things that she stacked against the shed. Each wheel fitted so neatly together that Chloe took this photo. Now the radius of the largest wheel was 16 cm and the radius of the middle-sized wheel was 9 cm. What was the radius of Chloe's smallest wheel?

SOLUTION



MATHEMATICAL CALCULATIONS

$$x^2 + 7^2 = 25^2$$

$$x^2 + 49 = 625$$

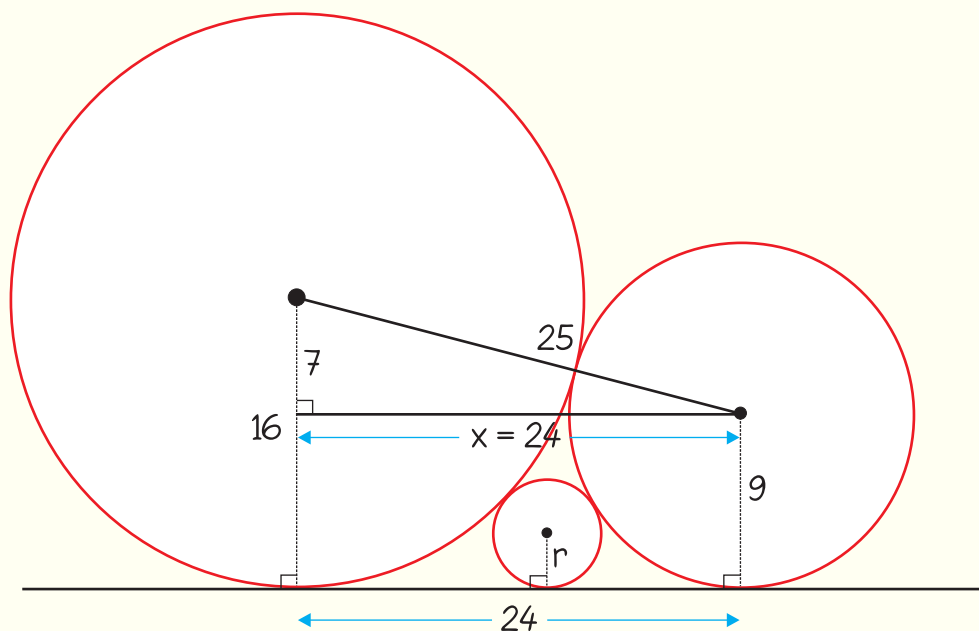
$$x^2 = 576$$

$$x = 24$$

MATHS PROBLEM NO. 1

Chloe had three wheels from bikes and things that she stacked against the shed. Each wheel fitted so neatly together that Chloe took this photo. Now the radius of the largest wheel was 16 cm and the radius of the middle-sized wheel was 9 cm. What was the radius of Chloe's smallest wheel?

SOLUTION



MATHEMATICAL CALCULATIONS

$$x^2 + 7^2 = 25^2$$

$$x^2 + 49 = 625$$

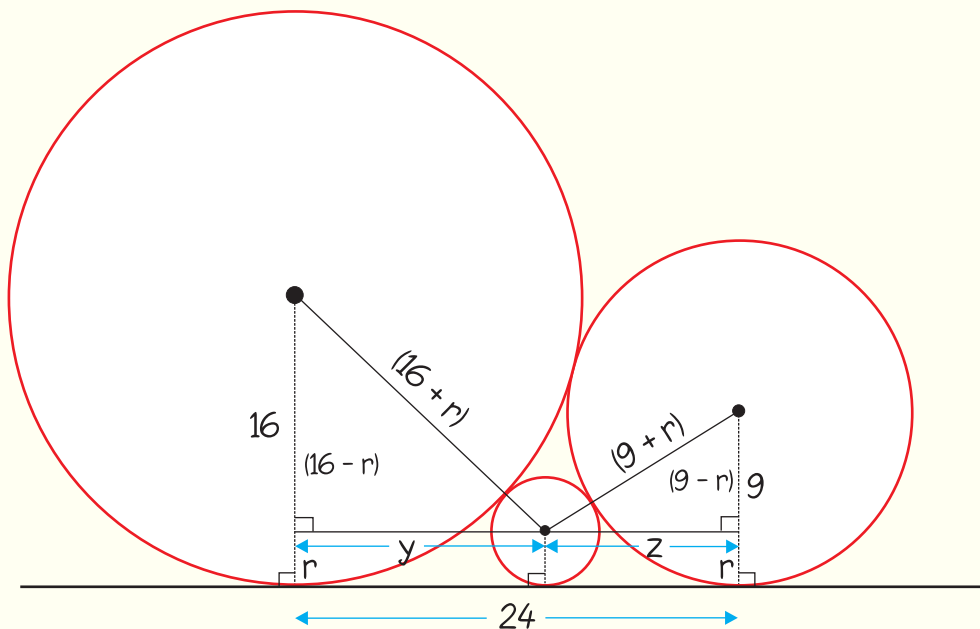
$$x^2 = 576$$

$$x = 24$$

MATHS PROBLEM NO. 1

Chloe had three wheels from bikes and things that she stacked against the shed. Each wheel fitted so neatly together that Chloe took this photo. Now the radius of the largest wheel was 16 cm and the radius of the middle-sized wheel was 9 cm. What was the radius of Chloe's smallest wheel?

SOLUTION



$$y + z = 24$$

$$8\sqrt{r} + 6\sqrt{r} = 24$$

$$14\sqrt{r} = 24$$

$$\sqrt{r} = \frac{24}{14} = \frac{12}{7}$$

$$r = \left(\frac{12}{7}\right)^2 = \frac{144}{49}$$

MATHEMATICAL CALCULATIONS

$$y^2 + (16 - r)^2 = (16 + r)^2$$

$$y^2 = (16 + r)^2 - (16 - r)^2$$

$$y^2 = [16 + r + 16 - r][16 + r - 16 + r]$$

$$y^2 = [32][2r]$$

$$y^2 = 64r$$

$$y = \sqrt{64r} = 8\sqrt{r}$$

$$z^2 + (9 - r)^2 = (9 + r)^2$$

$$z^2 = (9 + r)^2 - (9 - r)^2$$

$$z^2 = [9 + r + 9 - r][9 + r - 9 + r]$$

$$z^2 = [18][2r]$$

$$z^2 = 36r$$

$$z = \sqrt{36r} = 6\sqrt{r}$$