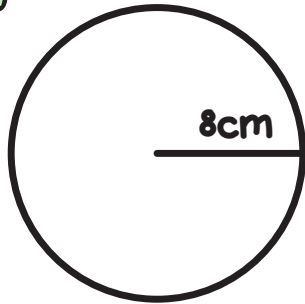


Big Maths Beat That!: Teacher Notes

SAFE Challenge 19			
	Step Location in the SAFE framework		Title of Step
	Progress Drive	Step No.	
Q1	Amounts: Amounts of Distance	30	I can identify and measure the diameter of a circle
		31	I can identify and measure the radius of a circle
Q2	Amounts: Amounts of Turn	32	I know 180° = sum of interior angles in every triangle (and can therefore find missing angles)
Q3	Amounts: Amounts of Turn	33	I know 360° = sum of interior angles in every quadrilateral and every circle (and can therefore find missing angles)
Q4	Fractions: Fractions of a Set	14	I can tell you the total if I know the value of a fraction
Q5	Fractions: Fractions: Calculation	18	I can use common factors to simplify
Q6	Fractions: Fractions: Calculation	20	I can multiply one fraction by another
Q7	Fractions: Fractions: Percentages	5	I can find percentages of convenient numbers
Q8	Fractions: Fractions: Ratio	11	I can maintain a ratio through differing totals
Q9	Explaining Data: Pie Charts	4	I can find missing angles, given the proportional value and the total value
		5	I can find missing proportional values given the angle and the total value
Q10	Explaining Data: Averages	6	I can find the mean value for a set of data

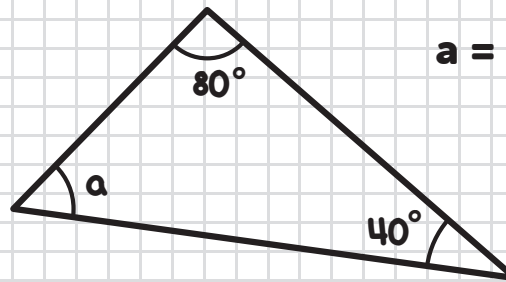
1



Radius =
_____ cm

Diameter =
_____ cm

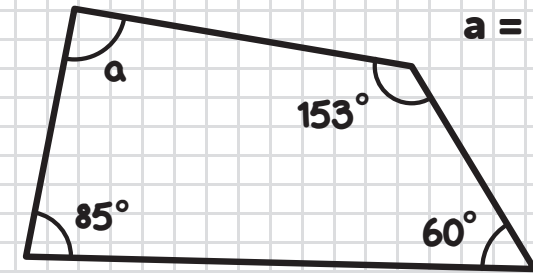
2 Calculate angle 'a'



a =

3

Calculate angle 'a'



a =

4

$$\frac{2}{3} \text{ of } \underline{\hspace{2cm}} = 18$$

5

Simplify the fraction

$$\frac{18}{42} =$$

6

$$\frac{5}{6} \times \frac{2}{3} =$$

7

$$22\% \text{ of } 300 =$$

8

Red and green sweets are mixed in the ratio **2:3**.

There are **20** sweets altogether.

How many are red?

9

We asked 200 children what their favourite colour was. 50 chose red. What angle would this show on a pie chart?

10

15, 25, 25, 16, 19

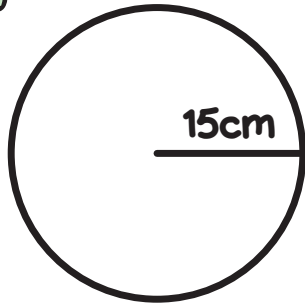
Mean \rightarrow _____

MY LAST SCORE?!

HAVE I BEAT THAT?!



1



Radius =

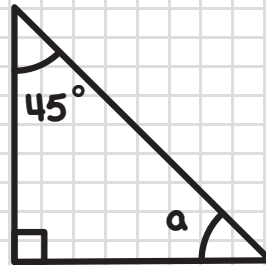
_____ cm

Diameter =

_____ cm

2

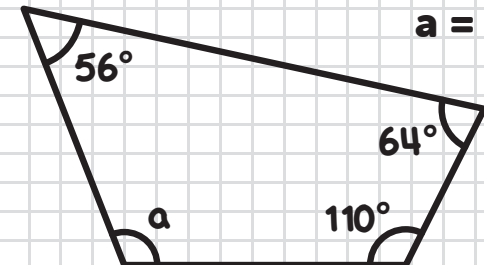
Calculate angle 'a'



a =

3

Calculate angle 'a'



a =

4

$$\frac{1}{4} \text{ of } \underline{\hspace{2cm}} = 6$$

5

Simplify the fraction

$$\frac{15}{50} =$$

6

$$\frac{4}{6} \times \frac{1}{4} =$$

7

$$15\% \text{ of } 200 =$$

8

Blue and yellow balls are mixed in the ratio **2:1**.

There are **15** balls altogether.

How many are blue?

9

We asked 150 children what their favourite sport was. 75 chose tennis. What angle would this show on a pie chart?

10

5, 9, 11, 2, 18

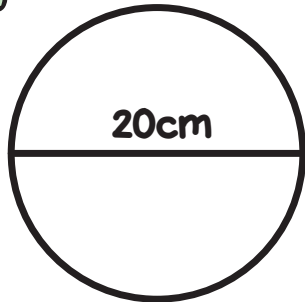
Mean \rightarrow _____

MY LAST SCORE?!

HAVE I BEAT THAT?!



1



Radius =

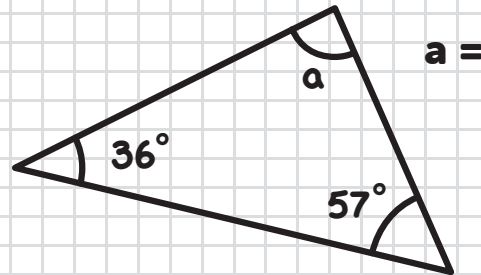
_____ cm

Diameter =

_____ cm

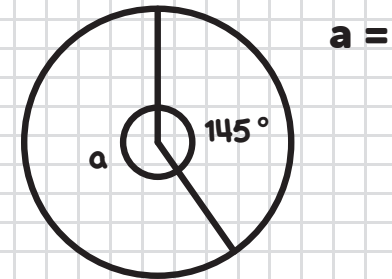
2

Calculate angle 'a'



3

Calculate angle 'a'



4

$$\frac{2}{5} \text{ of } \underline{\hspace{2cm}} = 12$$

5

Simplify the fraction

$$\frac{27}{81} =$$

6

$$\frac{2}{7} \times \frac{7}{9} =$$

7

$$55\% \text{ of } 240 =$$

8

Purple and blue socks are mixed in the ratio **4:2**.

There are **36** socks altogether.

How many are purple?

9

We asked 100 children what their favourite pet was. On a pie chart, 90° shows the number who liked cats. How many children liked cats?

10

16, 1, 12, 4, 9, 6

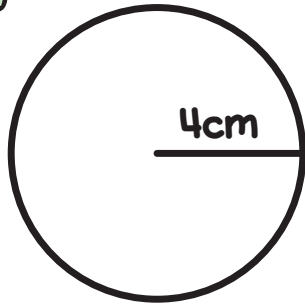
Mean \rightarrow _____

MY LAST SCORE?!

HAVE I BEAT THAT?!



1

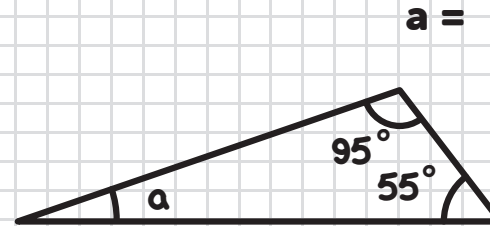


Radius =
_____ cm

Diameter =
_____ cm

2

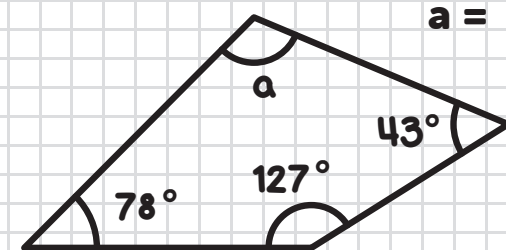
Calculate angle 'a'



a =

3

Calculate angle 'a'



a =

4

$$\frac{3}{6} \text{ of } \underline{\hspace{2cm}} = 42$$

5

Simplify the fraction

$$\frac{14}{35} =$$

6

$$\frac{1}{3} \times \frac{5}{8} =$$

7

$$70\% \text{ of } 210 =$$

8

Green and red balloons are mixed in the ratio **3:1**.

There are **40** balloons altogether.

How many are red?

9

We asked 99 children what their favourite drink was. On a pie chart, 240° shows the number who liked milk. How many children liked milk?

10

2, 11, 1, 14, 5, 3

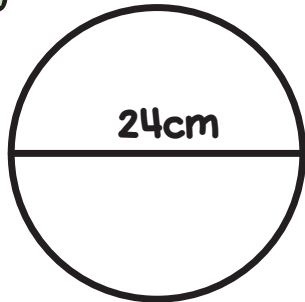
Mean \rightarrow _____

MY LAST SCORE?!

HAVE I BEAT THAT?!



1



Radius =

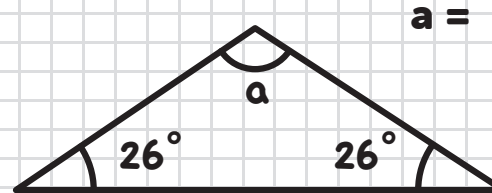
_____ cm

Diameter =

_____ cm

2

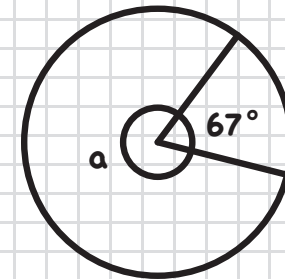
Calculate angle 'a'



a =

3

Calculate angle 'a'



a =

4

$$\frac{3}{8} \text{ of } \underline{\hspace{2cm}} = 24$$

5

Simplify the fraction

$$\frac{20}{25} =$$

6

$$\frac{2}{5} \times \frac{3}{9} =$$

7

$$25\% \text{ of } 160 =$$

8

Black and white counters are mixed in the ratio **5:3**.

There are **64** counters altogether.

How many are white?

9

We asked 120 children what their favourite food was. 90 chose pizza. What angle would this show on a pie chart?

10

9, 10, 9, 7, 15

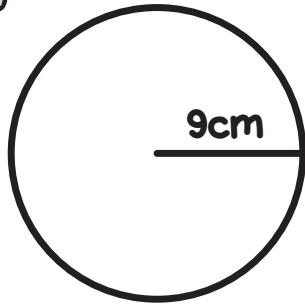
Mean → _____

MY LAST SCORE?!

HAVE I BEAT THAT?!



1



Radius =

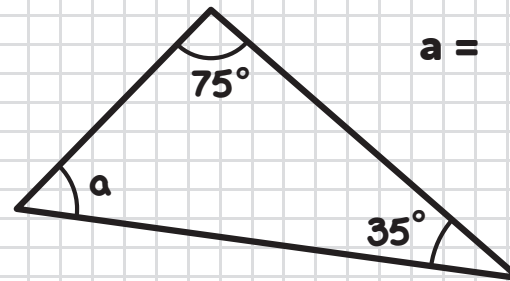
_____ cm

Diameter =

_____ cm

2

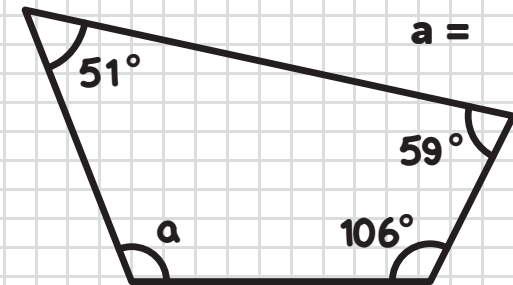
Calculate angle 'a'



a =

3

Calculate angle 'a'



a =

4

$$\frac{3}{4} \text{ of } \underline{\hspace{2cm}} = 30$$

5

Simplify the fraction

$$\frac{45}{60} =$$

6

$$\frac{1}{4} \times \frac{6}{7} =$$

7

$$12\% \text{ of } 150 =$$

8

Green and red sweets are mixed in the ratio **3:2**.

There are **25** sweets altogether.

How many are green?

9

We asked 250 children what their favourite game was. 125 chose Lego. What angle would this show on a pie chart?

10

2, 2, 3, 7, 1

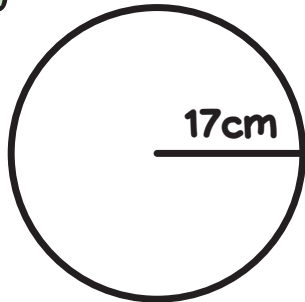
Mean \rightarrow _____

MY LAST SCORE?!

HAVE I BEAT THAT?!



1



Radius =

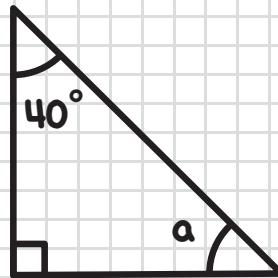
_____ cm

Diameter =

_____ cm

2

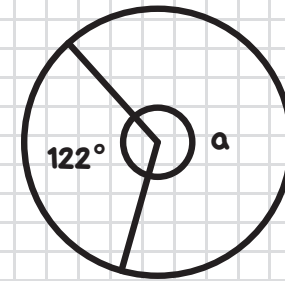
Calculate angle 'a'



a =

3

Calculate angle 'a'



a =

4

$$\frac{5}{6} \text{ of } \underline{\hspace{2cm}} = 35$$

5

Simplify the fraction

$$\frac{35}{42} =$$

6

$$\frac{1}{3} \times \frac{3}{5} =$$

7

$$51\% \text{ of } 100 =$$

8

Red and blue balls are mixed in the ratio **5:3**.

There are **56** balls altogether.

How many are blue?

9

We asked 200 children what their favourite colour was. On a pie chart, 270° shows the number who liked green. How many children liked green?

10

11, 12, 10, 8, 4

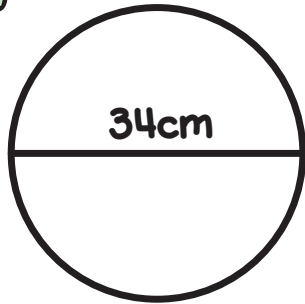
Mean \rightarrow _____



MY LAST SCORE?!

HAVE I BEAT THAT?!

1



Radius =

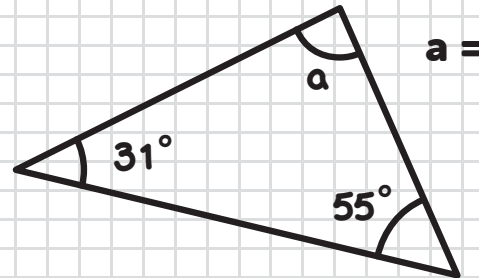
_____ cm

Diameter =

_____ cm

2

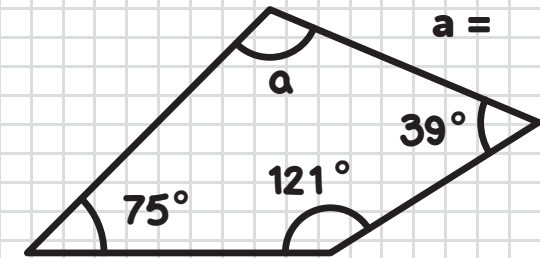
Calculate angle 'a'



a =

3

Calculate angle 'a'



a =

4

$$\frac{1}{5} \text{ of } \underline{\hspace{2cm}} = 5$$

5

Simplify the fraction

$$\frac{9}{27} =$$

6

$$\frac{3}{7} \times \frac{2}{8} =$$

7

25% of 96 =

8

Yellow and green balls are mixed in the ratio **4:1**.

There are **35** balls altogether.

How many are green?

9

We asked 66 children what their favourite food was. 44 chose pasta. What angle would this show on a pie chart?

10

15, 22, 16, 4, 8

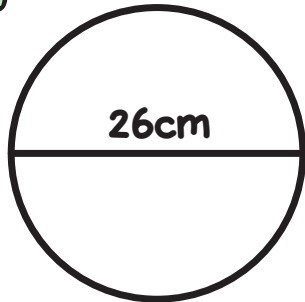
Mean → _____

MY LAST SCORE?!

HAVE I BEAT THAT?!



1

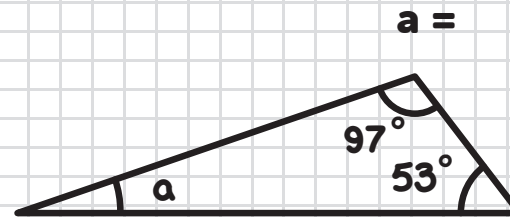


Radius =
_____ cm

Diameter =
_____ cm

2

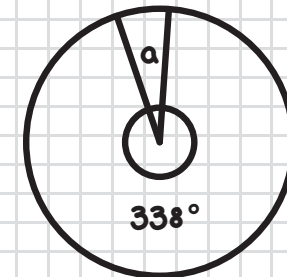
Calculate angle 'a'



a =

3

Calculate angle 'a'



a =

4

$$\frac{2}{7} \text{ of } \underline{\hspace{2cm}} = 14$$

5

Simplify the fraction

$$\frac{9}{24} =$$

6

$$\frac{6}{8} \times \frac{7}{9} =$$

7

$$12\% \text{ of } 100 =$$

8

Purple and blue gems are mixed in the ratio **2:3**.

There are **50** gems altogether.

How many are purple?

9

We asked 160 children what their favourite sport was. 40 chose cricket. What angle would this show on a pie chart?

10

1, 6, 9, 13, 16

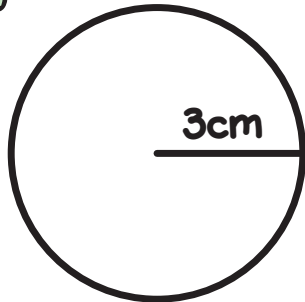
Mean \rightarrow _____

MY LAST SCORE?!

HAVE I BEAT THAT?!



1



Radius =

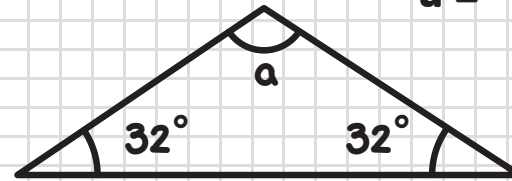
_____ cm

Diameter =

_____ cm

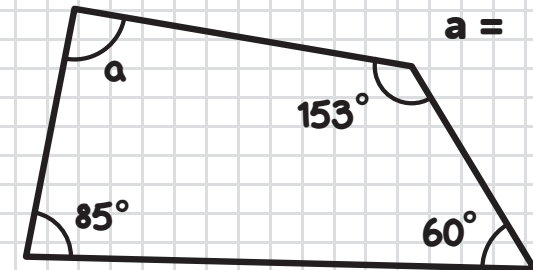
2

Calculate angle 'a'



3

Calculate angle 'a'



4

$$\frac{7}{9} \text{ of } \underline{\hspace{2cm}} = 14$$

5

Simplify the fraction

$$\frac{36}{63} =$$

6

$$\frac{2}{6} \times \frac{5}{9} =$$

7

$$52\% \text{ of } 200 =$$

8

Green and yellow balls are mixed in the ratio **2:1**.

There are **60** balls altogether.

How many are yellow?

9

We asked 140 children what their favourite pet was. On a pie chart, 180° shows the number who liked dogs. How many children liked dogs?

10

6, 8, 10, 11, 15

Mean \rightarrow _____

MY LAST SCORE?!

HAVE I BEAT THAT?!



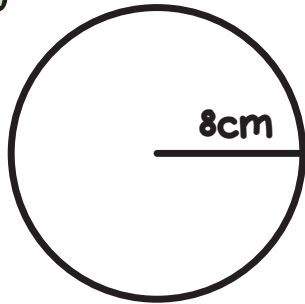
ANSWERS

SAFE 19

SET: 1

/10

1

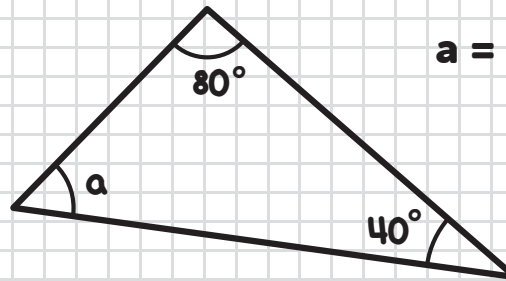


Radius =
8 cm

Diameter =
16 cm

2

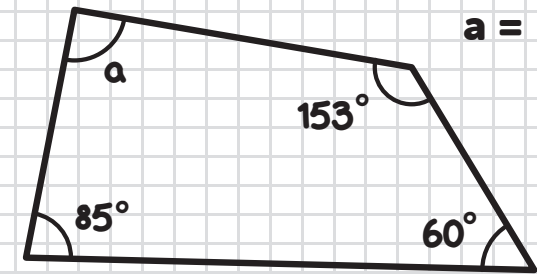
Calculate angle 'a'



a = **60°**

3

Calculate angle 'a'



a = **62°**

4

$$\frac{2}{3} \text{ of } \underline{27} = 18$$

5

Simplify the fraction

$$\frac{18}{42} = \frac{3}{7}$$

6

$$\frac{5}{6} \times \frac{2}{3} = \frac{10}{18}$$

7

22% of 300 =

66

8

Red and green sweets are mixed in the ratio **2:3**.

There are **20** sweets altogether.

How many are red?

8

9

We asked 200 children what their favourite colour was. 50 chose red. What angle would this show on a pie chart?

90°

10

15, 25, 25, 16, 19

Mean → **20**



MY LAST SCORE?!

HAVE I BEAT THAT?!



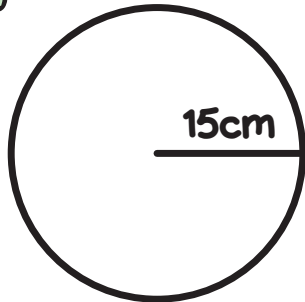
ANSWERS

SAFE 19

SET: 2

/10

1

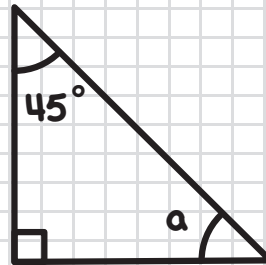


Radius =
15 cm

Diameter =
30 cm

2

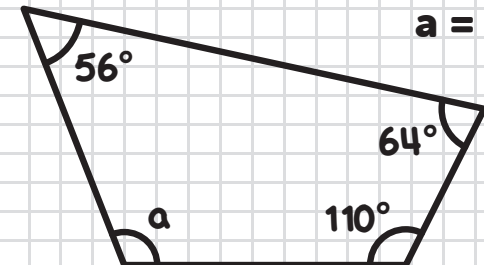
Calculate angle 'a'



a = **45°**

3

Calculate angle 'a'



a = **130°**

4

$$\frac{1}{4} \text{ of } \underline{24} = 6$$

5

Simplify the fraction

$$\frac{15}{50} = \frac{3}{10}$$

6

$$\frac{4}{6} \times \frac{1}{4} = \frac{4}{24}$$

7

15% of 200 =
30

8

Blue and yellow balls are mixed in the ratio **2:1**.

There are **15** balls altogether.

How many are blue?

10

9

We asked 150 children what their favourite sport was. 75 chose tennis. What angle would this show on a pie chart?

180°

10

5, 9, 11, 2, 18

Mean → **9**



MY LAST SCORE?!

HAVE I BEAT THAT?!



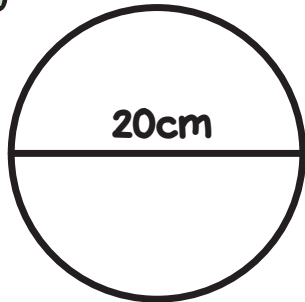
ANSWERS

SAFE 19

SET: 3

/10

1

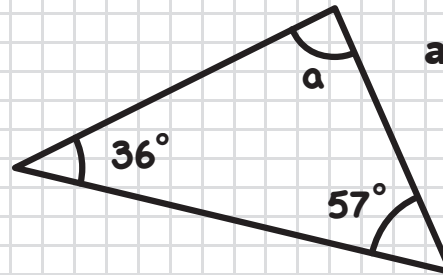


Radius = 10 cm

Diameter = 20 cm

2

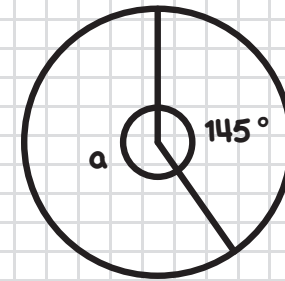
Calculate angle 'a'



a = **87°**

3

Calculate angle 'a'



a = **215°**

4

$$\frac{2}{5} \text{ of } \underline{30} = 12$$

5

Simplify the fraction

$$\frac{27}{81} = \frac{1}{3}$$

6

$$\frac{2}{7} \times \frac{7}{9} = \frac{14}{63}$$

7

55% of 240 =
132

8

Purple and blue socks are mixed in the ratio **4:2**.

There are **36** socks altogether.

How many are purple?

24

9

We asked 100 children what their favourite pet was. On a pie chart, 90° shows the number who liked cats. How many children liked cats?

25

10

16, 1, 12, 4, 9, 6

Mean → 8



MY LAST SCORE?!

HAVE I BEAT THAT?!



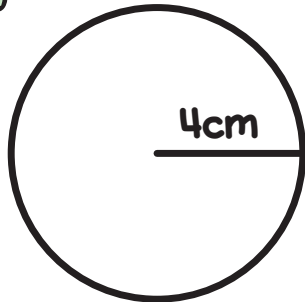
ANSWERS

SAFE 19

SET: 4

/10

1

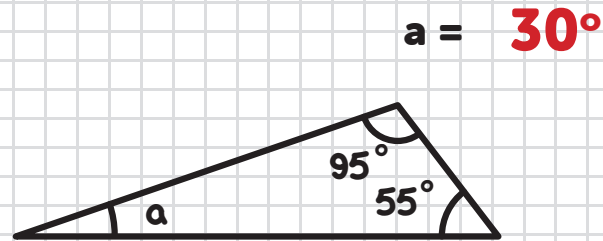


Radius =
4 cm

Diameter =
8 cm

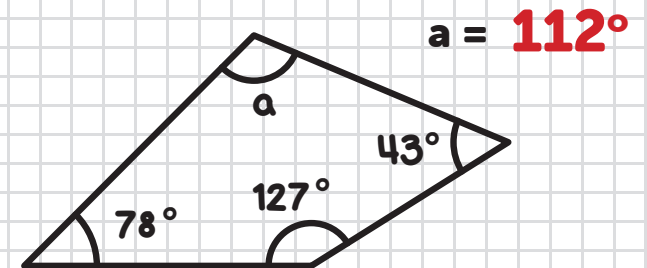
2

Calculate angle 'a'



3

Calculate angle 'a'



4

$$\frac{3}{6} \text{ of } \underline{84} = 42$$

5

Simplify the fraction

$$\frac{14}{35} = \frac{2}{5}$$

6

$$\frac{1}{3} \times \frac{5}{8} = \frac{5}{24}$$

7

70% of 210 =
147

8

Green and red balloons are mixed in the ratio **3:1**.

There are **40** balloons altogether.

How many are red?

10

9

We asked 99 children what their favourite drink was. On a pie chart, 240° shows the number who liked milk. How many children liked milk?

66

10

2, 11, 1, 14, 5, 3

Mean \rightarrow **6**



MY LAST SCORE?!

HAVE I BEAT THAT?!



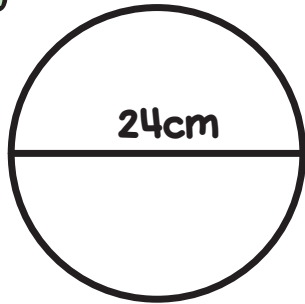
ANSWERS

SAFE 19

SET: 5

/10

1

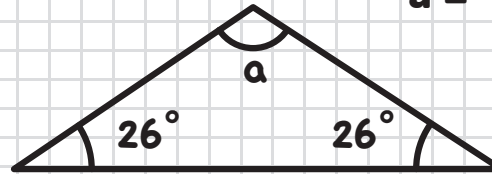


Radius = 12 cm

Diameter = 24 cm

2

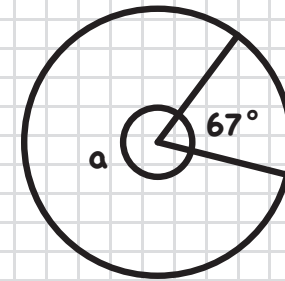
Calculate angle 'a'



a = **128°**

3

Calculate angle 'a'



a = **293°**

4

$$\frac{3}{8} \text{ of } \underline{64} = 24$$

5

Simplify the fraction

$$\frac{20}{25} = \frac{4}{5}$$

6

$$\frac{2}{5} \times \frac{3}{9} = \frac{6}{45}$$

7

25% of 160 =
40

8

Black and white counters are mixed in the ratio **5:3**.

There are **64** counters altogether.

How many are white?

24

9

We asked 120 children what their favourite food was. 90 chose pizza. What angle would this show on a pie chart?

270°

10

9, 10, 9, 7, 15

Mean → 10



MY LAST SCORE?!

HAVE I BEAT THAT?!



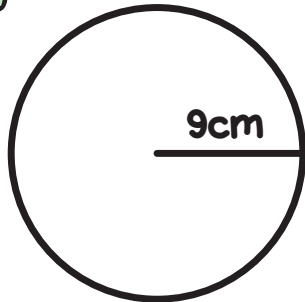
ANSWERS

SAFE 19

SET: 6

/10

1



Radius =

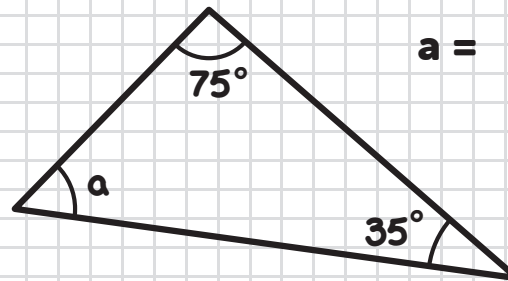
9 cm

Diameter =

18 cm

2

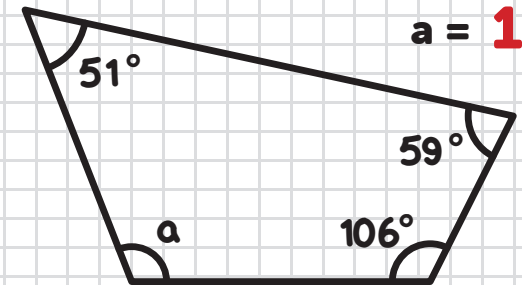
Calculate angle 'a'



$a = 70^\circ$

3

Calculate angle 'a'



$a = 144^\circ$

4

$$\frac{3}{4} \text{ of } \underline{40} = 30$$

5

Simplify the fraction

$$\frac{45}{60} = \frac{3}{4}$$

6

$$\frac{1}{4} \times \frac{6}{7} = \frac{6}{28}$$

7

12% of 150 =

18

8

Green and red sweets are mixed in the ratio **3:2**.

There are **25** sweets altogether.

How many are green?

15

9

We asked 250 children what their favourite game was. 125 chose Lego. What angle would this show on a pie chart?

180°

10

2, 2, 3, 7, 1

Mean \rightarrow **3**



MY LAST SCORE?!

HAVE I BEAT THAT?!



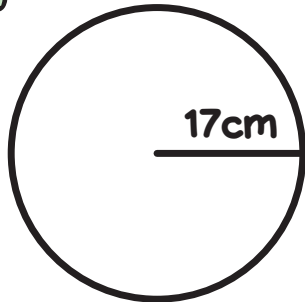
ANSWERS

SAFE 19

SET: 7

/10

1

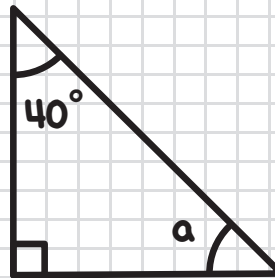


Radius =
17 cm

Diameter =
34 cm

2

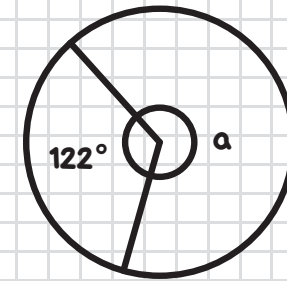
Calculate angle 'a'



a = **50°**

3

Calculate angle 'a'



a = **238°**

4

$$\frac{5}{6} \text{ of } \underline{42} = 35$$

5

Simplify the fraction

$$\frac{35}{42} = \frac{5}{6}$$

6

$$\frac{1}{3} \times \frac{3}{5} = \frac{3}{15}$$

7

51% of 100 =

51

8

Red and blue balls are mixed in the ratio **5:3**.

There are **56** balls altogether.

How many are blue?

21

9

We asked 200 children what their favourite colour was. On a pie chart, 270° shows the number who liked green. How many children liked green?

150

10

11, 12, 10, 8, 4

Mean \rightarrow **9**



MY LAST SCORE?!

HAVE I BEAT THAT?!



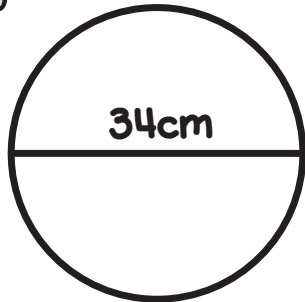
ANSWERS

SAFE 19

SET: 8

/10

1

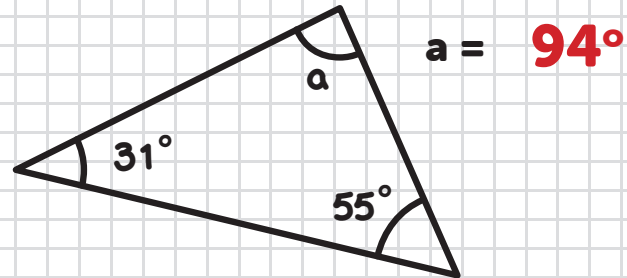


Radius = 17 cm

Diameter = 34 cm

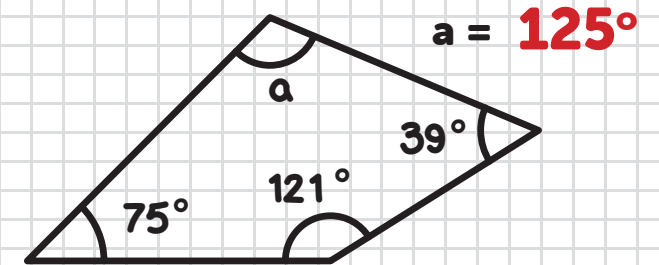
2

Calculate angle 'a'



3

Calculate angle 'a'



4

$$\frac{1}{5} \text{ of } \underline{25} = 5$$

5

Simplify the fraction

$$\frac{9}{27} = \frac{1}{3}$$

6

$$\frac{3}{7} \times \frac{2}{8} = \frac{6}{56}$$

7

$$25\% \text{ of } 96 = \underline{24}$$

8

Yellow and green balls are mixed in the ratio **4:1**.

There are **35** balls altogether.

How many are green?

7

9

We asked 66 children what their favourite food was. 44 chose pasta. What angle would this show on a pie chart?

240°

10

15, 22, 16, 4, 8

Mean → 13



MY LAST SCORE?!

HAVE I BEAT THAT?!



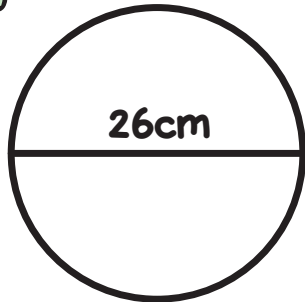
ANSWERS

SAFE 19

SET: 9

/10

1

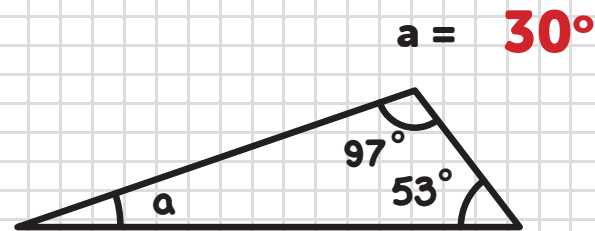


Radius =
13 cm

Diameter =
26 cm

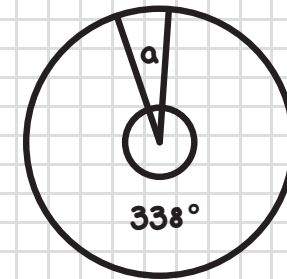
2

Calculate angle 'a'



3

Calculate angle 'a'



4

$$\frac{2}{7} \text{ of } \underline{49} = 14$$

5

Simplify the fraction

$$\frac{9}{24} = \frac{3}{8}$$

6

$$\frac{6}{8} \times \frac{7}{9} = \frac{42}{72}$$

7

12% of 100 =
12

8

Purple and blue gems are mixed in the ratio **2:3**.

There are **50** gems altogether.

How many are purple?

20

9

We asked 160 children what their favourite sport was. 40 chose cricket. What angle would this show on a pie chart?

90°

10

1, 6, 9, 13, 16

Mean → 9



MY LAST SCORE?!

HAVE I BEAT THAT?!



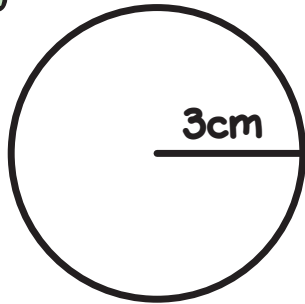
ANSWERS

SAFE 19

SET: 10

/10

1



Radius =

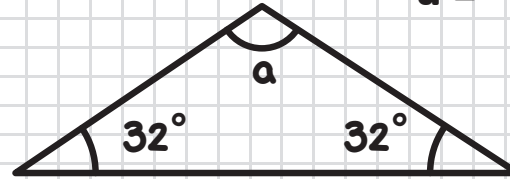
3 cm

Diameter =

6 cm

2

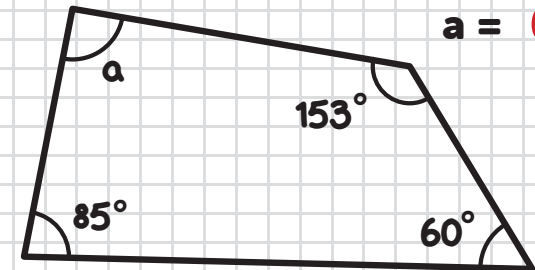
Calculate angle 'a'



a = **116°**

3

Calculate angle 'a'



a = **62°**

4

$$\frac{7}{9} \text{ of } \underline{18} = 14$$

5

Simplify the fraction

$$\frac{36}{63} = \frac{4}{7}$$

6

$$\frac{2}{6} \times \frac{5}{9} = \frac{10}{54}$$

7

52% of 200 =

104

8

Green and yellow balls are mixed in the ratio **2:1**.

There are **60** balls altogether.

How many are yellow?

20

9

We asked 140 children what their favourite pet was. On a pie chart, 180° shows the number who liked dogs. How many children liked dogs?

70

10

6, 8, 10, 11, 15

Mean → **10**



MY LAST SCORE?!

HAVE I BEAT THAT?!