

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

NAME:

CLASS:

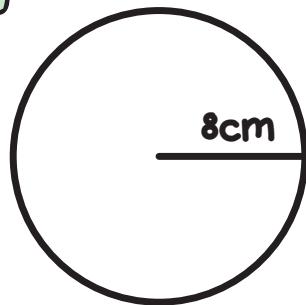
DATE:

SAFE 19

WK:1

/10

1



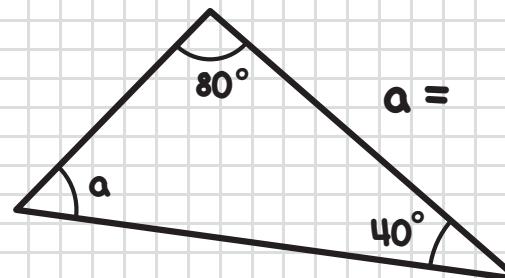
Radius =

_____ cm

Diameter =

_____ cm

2 Calculate angle 'a'



a =

3

Calculate angle 'a'



4

5 Simplify the fraction

6

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

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

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

7

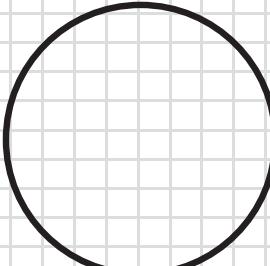
$$22\% \text{ of } 300 =$$

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

There are 20 sweets altogether.

How many are red?

9 The Favourite Colour of 200 Children



50 chose red. What angle would show this on a pie chart?

10

15, 25, 25, 16, 19

Mean → _____



MY LAST SCORE?!

HAVE I BEAT THAT?!

NAME:

CLASS:

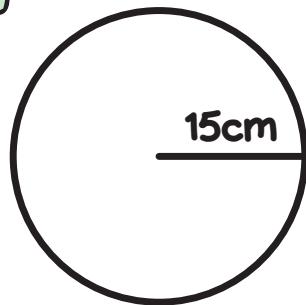
DATE:

SAFE 19

WK: 2

/10

1



Radius =

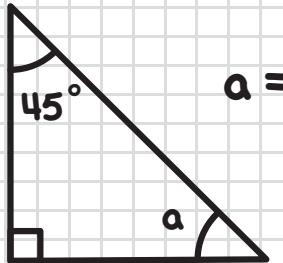
_____ cm

Diameter =

_____ cm

2

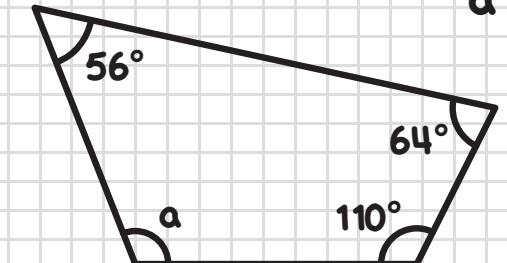
Calculate angle 'a'



a =

3

Calculate angle 'a'



a =

4

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

5

Simplify the fraction

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

6

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

7

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

8

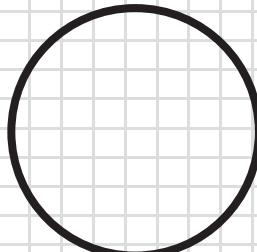
Blue and yellow balls are mixed in the ratio 2:1.

There are 15 balls altogether.

How many are blue?

9

The Favourite Sport of 150 Children



75 chose tennis. What angle would show this on a pie chart?

10

5, 9, 11, 2, 18

Mean → _____



MY LAST SCORE?!

HAVE I BEAT THAT?!

NAME:

CLASS:

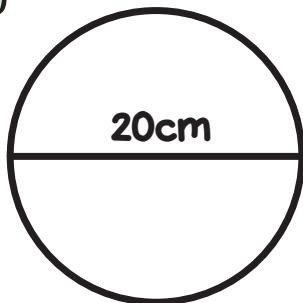
DATE:

SAFE 19

WK: 3

/10

1



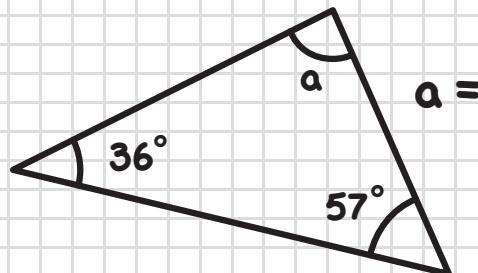
Radius =

_____ cm

Diameter =

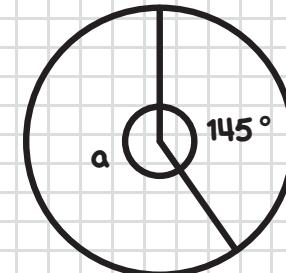
_____ cm

2 Calculate angle 'a'



3

Calculate angle 'a'



a =

4

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

5

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

6

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

7

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

8

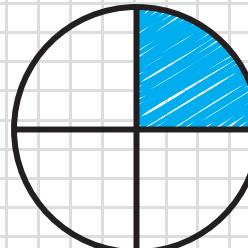
Purple and blue socks are mixed in the ratio 4:2.

There are 36 socks altogether.

How many are purple?

9

The Favourite Pet of 100 Children



90° shows the number who like cats. How many pupils is this?

10

16, 1, 12, 4, 9, 6

Mean → _____



MY LAST SCORE?!

HAVE I BEAT THAT?!

NAME:

CLASS:

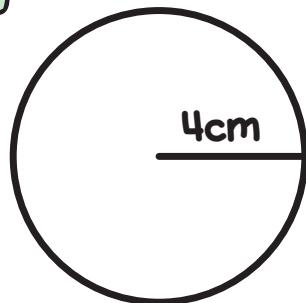
DATE:

SAFE 19

WK:4

/10

1



Radius =

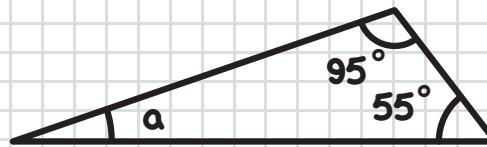
_____ cm

Diameter =

_____ cm

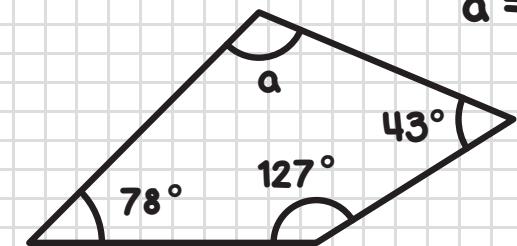
2 Calculate angle 'a'

a =



3 Calculate angle 'a'

a =



4

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

5

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

Simplify the fraction

6

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

7

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

8

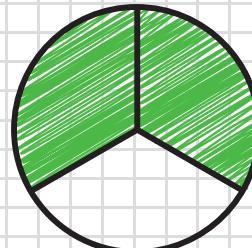
Green and red balloons are mixed in the ratio 3:1.

There are 40 balloons altogether.

How many are red?

9

The Favourite Drink of 99 Children



240° shows the number who like milk. How many pupils is this?

10

2, 11, 1, 14, 5, 3

Mean → _____



MY LAST SCORE?!

HAVE I BEAT THAT?!

NAME:

CLASS:

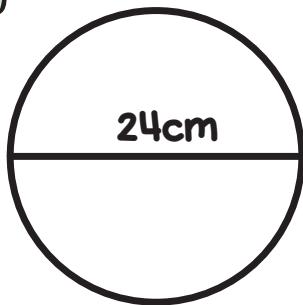
DATE:

SAFE 19

WK:5

/10

1



Radius =

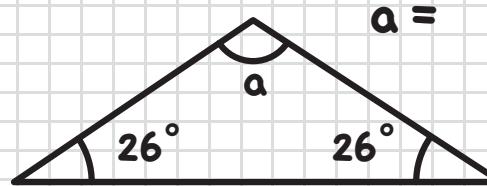
_____ cm

Diameter =

_____ cm

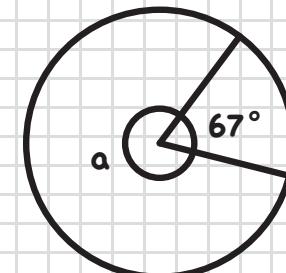
2

Calculate angle 'a'



3

Calculate angle 'a'



a =

4

5

Simplify the fraction

6

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

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

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

7

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

8

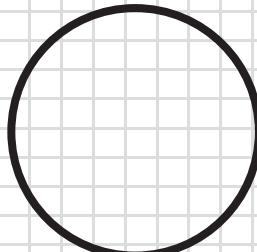
Black and white counters are mixed in the ratio 5:3.

There are 64 counters altogether.

How many are white?

9

The Favourite Food of 120 Children



90 chose pizza. What angle would show this on a pie chart?

10

9, 10, 9, 7, 15

Mean → _____



MY LAST SCORE?!

HAVE I BEAT THAT?!

NAME:

CLASS:

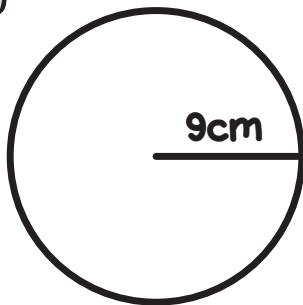
DATE:

SAFE 19

WK: 6

/10

1



Radius =

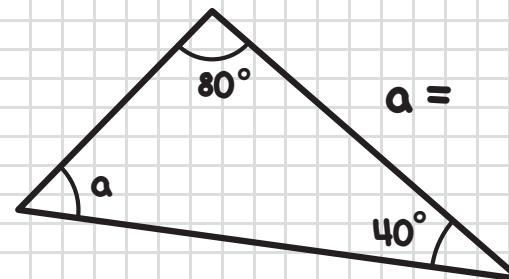
_____ cm

Diameter =

_____ cm

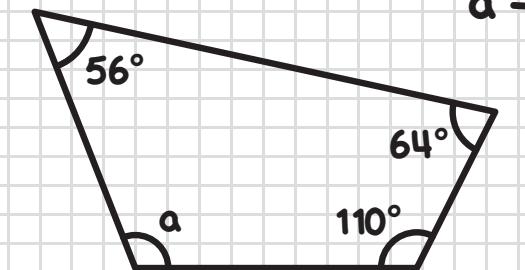
2

Calculate angle 'a'



3

Calculate angle 'a'



4

5

Simplify the fraction

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

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

6

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

7

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

8

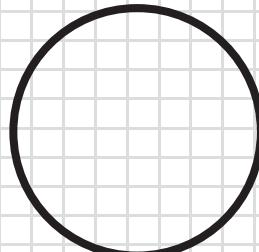
Green and red sweets are mixed in the ratio 3:2.

There are 25 sweets altogether.

How many are green?

9

The Favourite Game of 250 Children



125 chose Lego. What angle would show this on a pie chart?

10

2, 2, 3, 7, 1

Mean → _____



MY LAST SCORE?!

HAVE I BEAT THAT?!

NAME:

CLASS:

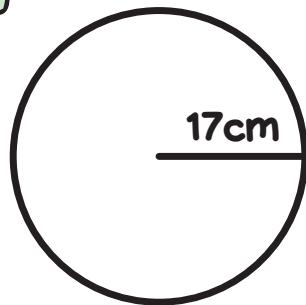
DATE:

SAFE 19

WK: 7

/10

1



Radius =

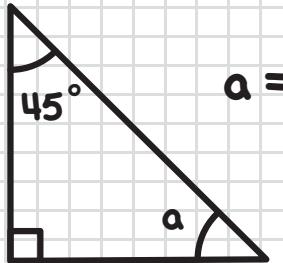
_____ cm

Diameter =

_____ cm

2

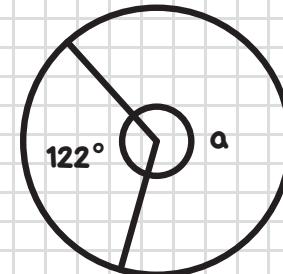
Calculate angle 'a'



a =

3

Calculate angle 'a'



a =

4

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

5

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

6

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

7

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

8

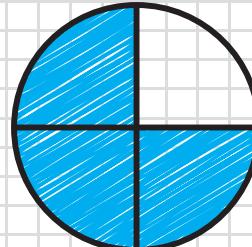
Red and blue balls are mixed in the ratio 5:3.

There are 56 balls altogether.

How many are blue?

9

The Favourite Colour of 200 Children



270° shows the number who like green. How many pupils is this?

10

11, 12, 10, 8, 4

Mean → _____



MY LAST SCORE?!

HAVE I BEAT THAT?!

NAME:

CLASS:

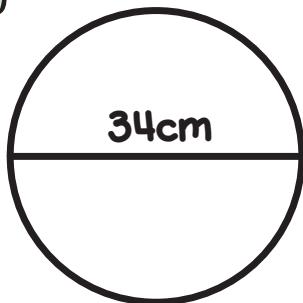
DATE:

SAFE 19

WK: 8

/10

1



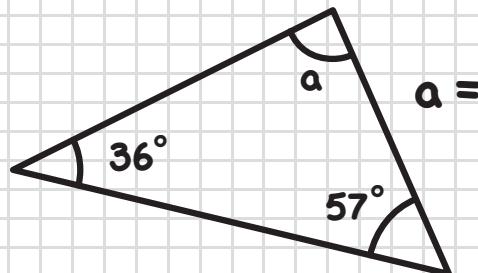
Radius =

_____ cm

Diameter =

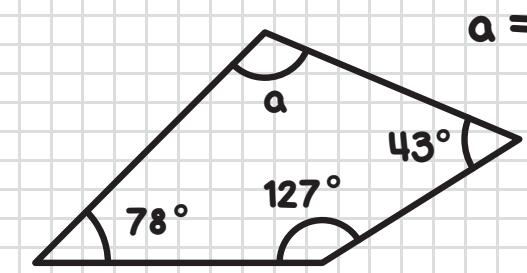
_____ cm

2 Calculate angle 'a'



3

Calculate angle 'a'



4

5 Simplify the fraction

6

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

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

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

7

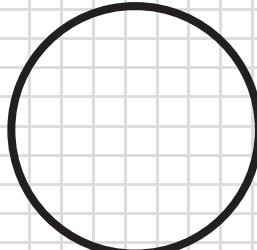
$$25\% \text{ of } 96 =$$

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

There are 35 balls altogether.

How many are green?

9 The Favourite Food of 66 Children



44 chose pasta. What angle would show this on a pie chart?

10

15, 22, 16, 4, 8

Mean → _____



MY LAST SCORE?!

HAVE I BEAT THAT?!

NAME:

CLASS:

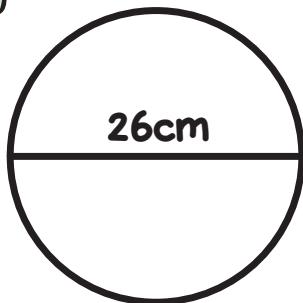
DATE:

SAFE 19

WK:9

/10

1



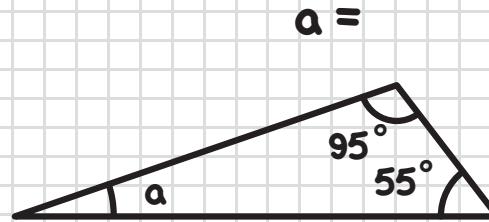
Radius =

_____ cm

Diameter =

_____ cm

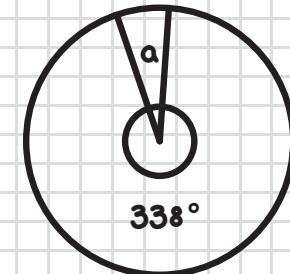
2 Calculate angle 'a'



a =

3

Calculate angle 'a'



a =

4

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

5

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

6

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

7

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

8

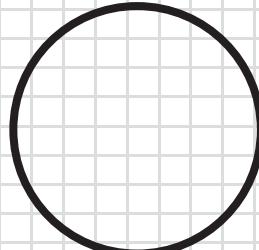
Purple and blue gems are mixed in the ratio **2:3**.

There are **50** gems altogether.

How many are purple?

9

The Favourite Sport of 160 Children



40 chose cricket. What angle would show this on a pie chart?

10

1, 6, 9, 13, 16

Mean → _____



MY LAST SCORE?!

HAVE I BEAT THAT?!

NAME:

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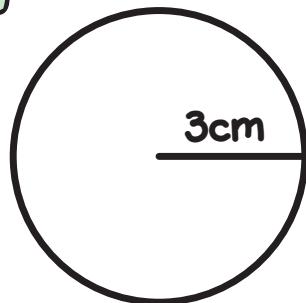
DATE:

SAFE 19

WK: 10

/10

1



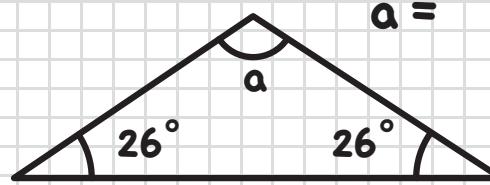
Radius =

_____ cm

Diameter =

_____ cm

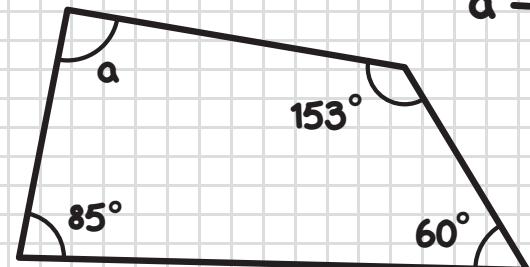
2 Calculate angle 'a'



a =

3

Calculate angle 'a'



4

5 Simplify the fraction

6

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

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

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

7

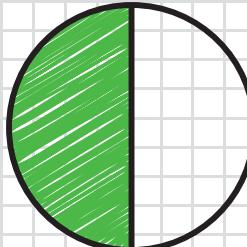
$$52\% \text{ of } 200 =$$

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

There are 60 balls altogether.

How many are yellow?

9 The Favourite Pet of 140 Children



180° shows the number who like dogs. How many pupils is this?

10

6, 8, 10, 11, 15

Mean → _____



MY LAST SCORE?!

HAVE I BEAT THAT?!

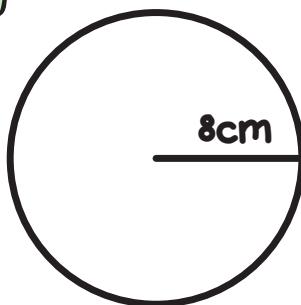
ANSWERS

SAFE 19

WK:1

10

1



Radius =

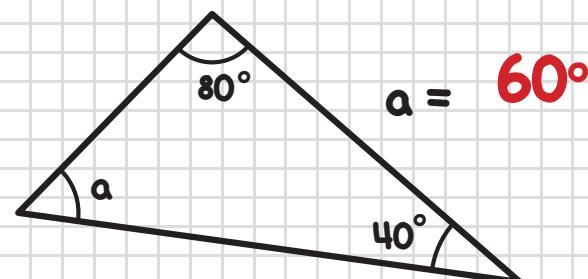
8 cm

Diameter =

16 cm

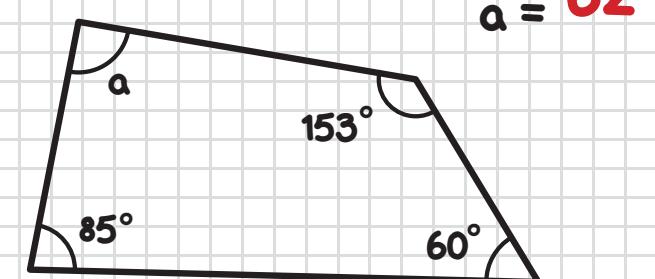
2

Calculate angle 'a'



3

Calculate angle 'a'



4

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

5

Simplify the fraction

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

6

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

7

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

66

8

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

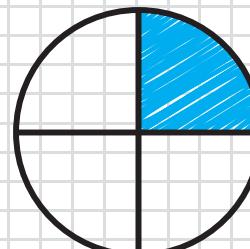
There are 20 sweets altogether.

How many are red?

8

9

The Favourite Colour of 200 Children



50 chose red. What angle would show this on a pie chart?

90°

10

15, 25, 25, 16, 19

Mean → 20



MY LAST SCORE?!

HAVE I BEAT THAT?!

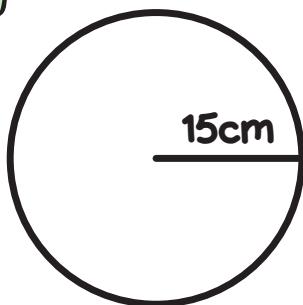
ANSWERS

SAFE 19

WK: 2

10

1



Radius =

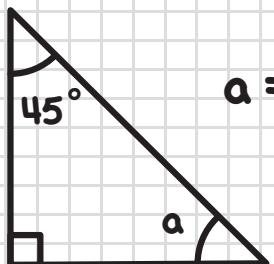
15 cm

Diameter =

30 cm

2

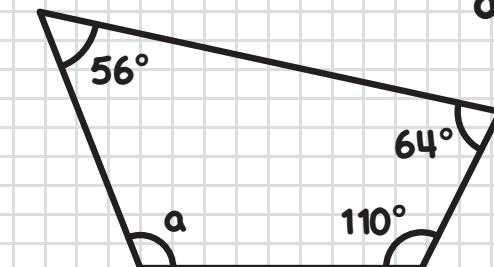
Calculate angle 'a'



45°

3

Calculate angle 'a'



$130°$

4

5

Simplify the fraction

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

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

6

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

7

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

30

8

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

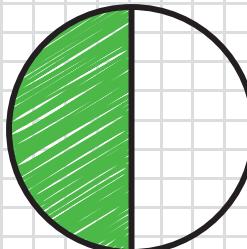
There are 15 balls altogether.

How many are blue?

10

9

The Favourite Sport of 150 Children



75 chose tennis. What angle would show this on a pie chart?

$180°$

10

5, 9, 11, 2, 18

Mean →

9



MY LAST SCORE?!

HAVE I BEAT THAT?!

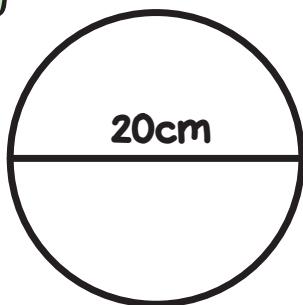
ANSWERS

SAFE 19

WK: 3

10

1



Radius =

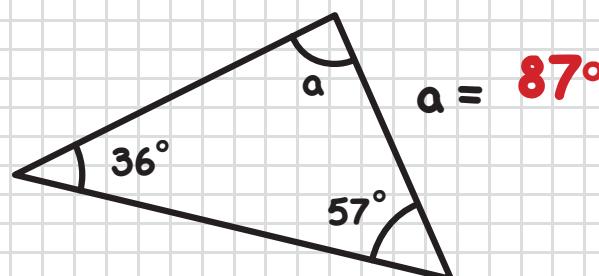
10 cm

Diameter =

20 cm

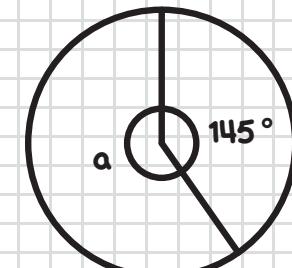
2

Calculate angle 'a'



3

Calculate angle 'a'



$a =$
215°

4

$\frac{2}{5}$ of **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.

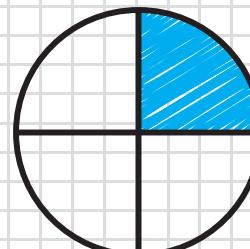
There are 36 socks altogether.

How many are purple?

24

9

The Favourite Pet of 100 Children



90° shows the number who like cats. How many pupils is this?

25

10

16, 1, 12, 4, 9, 6

Mean → **8**



MY LAST SCORE?!

HAVE I BEAT THAT?!

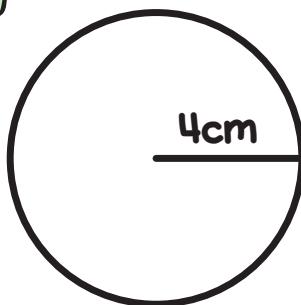
ANSWERS

SAFE 19

WK:4

/10

1



Radius =

4 cm

Diameter =

8 cm

2

Calculate angle 'a'

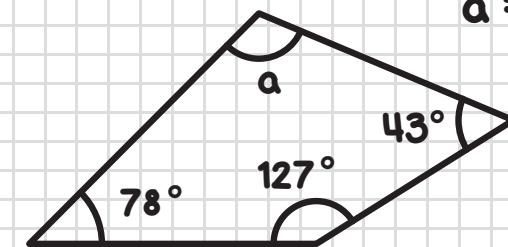
a = 30°



3

Calculate angle 'a'

a = 112°



4

$\frac{3}{6}$ of 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.

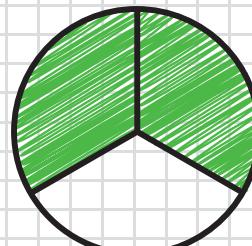
There are 40 balloons altogether.

How many are red?

10

9

The Favourite Drink of 99 Children



240° shows the number who like milk. How many pupils is this?

66

10

2, 11, 1, 14, 5, 3

Mean → 6



MY LAST SCORE?!

HAVE I BEAT THAT?!

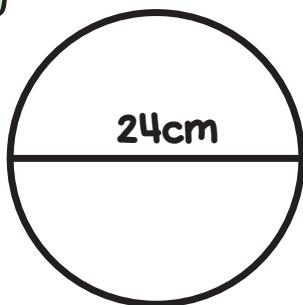
ANSWERS

SAFE 19

WK:5

10

1



Radius =

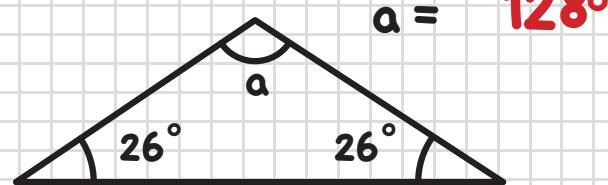
12 cm

Diameter =

24 cm

2

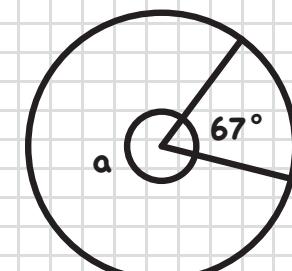
Calculate angle 'a'



$a = 128^\circ$

3

Calculate angle 'a'



$a = 293^\circ$

4

$\frac{3}{8}$ of 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.

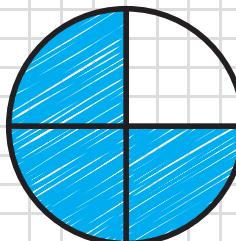
There are 64 counters altogether.

How many are white?

24

9

The Favourite Food of 120 Children



90 chose pizza. What angle would show this on a pie chart?

270°

10

9, 10, 9, 7, 15

Mean →

10



MY LAST SCORE?!

HAVE I BEAT THAT?!

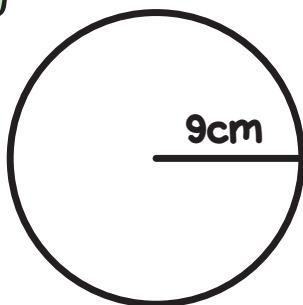
ANSWERS

SAFE 19

WK: 6

10

1



Radius =

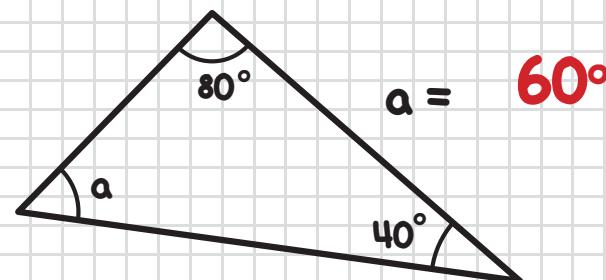
9 cm

Diameter =

18 cm

2

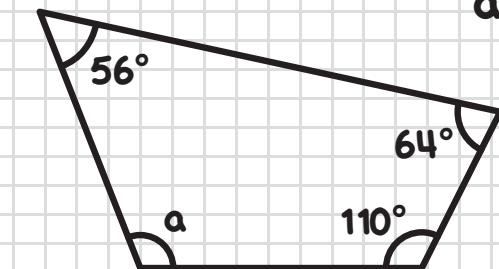
Calculate angle 'a'



3

Calculate angle 'a'

$a = 130^\circ$



4

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

5

Simplify the fraction

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

6

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

7

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

18

8

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

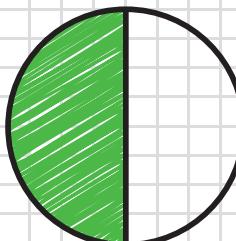
There are 25 sweets altogether.

How many are green?

15

9

The Favourite Game of 250 Children



125 chose Lego. What angle would show this on a pie chart?

180°

10

2, 2, 3, 7, 1

Mean →

3



MY LAST SCORE?!

HAVE I BEAT THAT?!

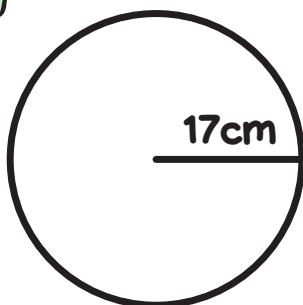
ANSWERS

SAFE 19

WK: 7

10

1



Radius =

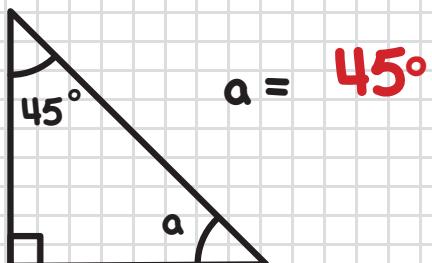
17 cm

Diameter =

34 cm

2

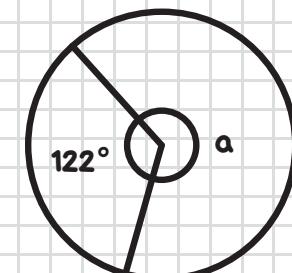
Calculate angle 'a'



$a = 45^\circ$

3

Calculate angle 'a'



$a = 238^\circ$

4

$\frac{5}{6}$ of 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.

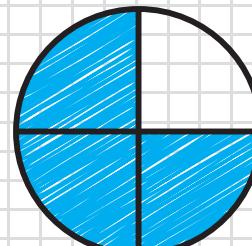
There are 56 balls altogether.

How many are blue?

21

9

The Favourite Colour of 200 Children



270° shows the number who like green. How many pupils is this?

150

10

11, 12, 10, 8, 4

Mean →

9



MY LAST SCORE?!

HAVE I BEAT THAT?!

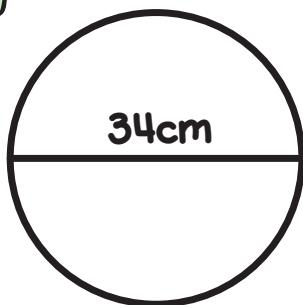
ANSWERS

SAFE 19

WK:8

/10

1



Radius =

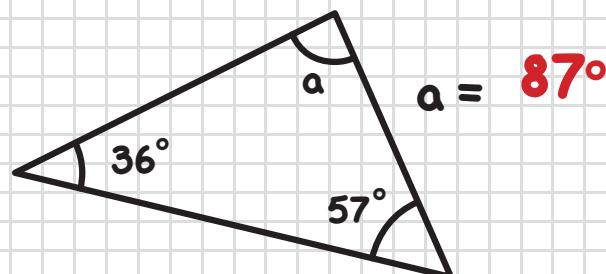
$$\underline{17} \text{ cm}$$

Diameter =

$$\underline{34} \text{ cm}$$

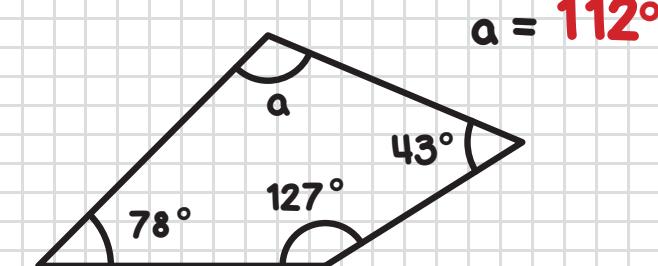
2

Calculate angle 'a'



3

Calculate angle 'a'



$$a = 112^\circ$$

4

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

5

Simplify the fraction

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

6

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

7

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

$$\underline{24}$$

8

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

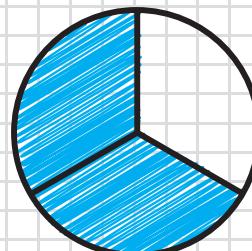
There are 35 balls altogether.

How many are green?

$$\underline{7}$$

9

The Favourite Food of 66 Children



44 chose pasta. What angle would show this on a pie chart?

$$\underline{240^\circ}$$

10

$$15, 22, 16, 4, 8$$

Mean →

$$\underline{13}$$



MY LAST SCORE?!

HAVE I BEAT THAT?!

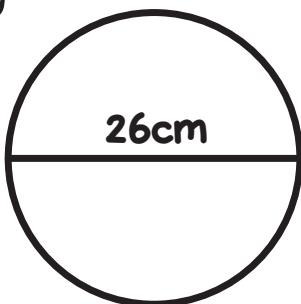
ANSWERS

SAFE 19

WK:9

10

1



Radius =

13 cm

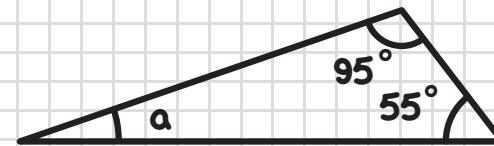
Diameter =

26 cm

2

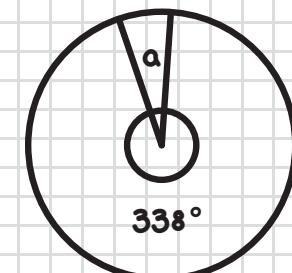
Calculate angle 'a'

a = 30°



3

Calculate angle 'a'



a =

22°

4

$\frac{2}{7}$ of 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.

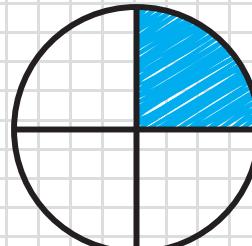
There are 50 gems altogether.

How many are purple?

20

9

The Favourite Sport of 160 Children



40 chose cricket. What angle would show this on a pie chart?

90°

10

1, 6, 9, 13, 16

Mean →

9



MY LAST SCORE?!

HAVE I BEAT THAT?!

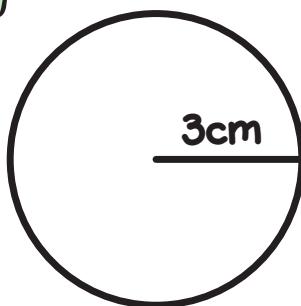
ANSWERS

SAFE 19

WK: 10

10

1



Radius =

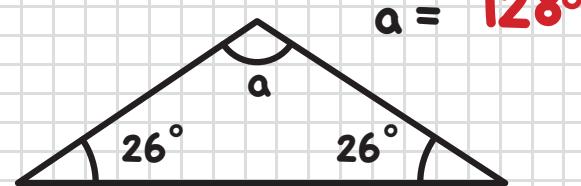
3 cm

Diameter =

6 cm

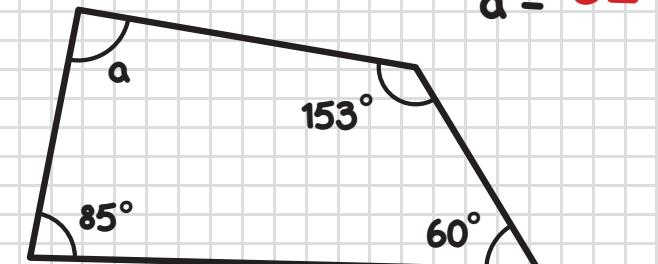
2

Calculate angle 'a'



3

Calculate angle 'a'



4

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

5

Simplify the fraction

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

6

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

7

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

104

8

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

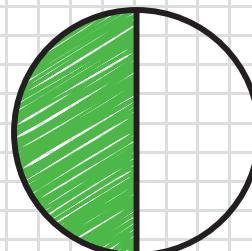
There are 60 balls altogether.

How many are yellow?

20

9

The Favourite Pet of 140 Children



180° shows the number who like dogs. How many pupils is this?

70

10

6, 8, 10, 11, 15

Mean →

10



MY LAST SCORE?!

HAVE I BEAT THAT?!