

Answer Key

Drawing Pie Charts with a Protractor

Chart 1 – Favourite Pets (class of 36 students)

Completed sector angles: Dog 120°, Cat 90°, Fish 80°, Rabbit 50°, Other 20°.

1. Completed chart; sectors listed above.
2. Dog, because $\frac{12}{36} = \frac{1}{3}$.
3. Cat: 9 students.

Chart 2 – Sports Club Memberships (36 members)

Completed sector angles: Football 140°, Swimming 90°, Tennis 60°, Basketball 50°, Other 20°.

1. Completed chart; sectors listed above.
2. Swimming has a 90° sector because $\frac{9}{36} = \frac{1}{4}$.
3. Tennis fraction = $\frac{6}{36} = \frac{1}{6}$.
4. The three smallest sports are Tennis, Basketball and Other:

$$60^\circ + 50^\circ + 20^\circ = 130^\circ.$$

Chart 3 – How Students Spend Most of Their Pocket Money (36 students)

Completed sector angles: Food & Drink 120°, Games 90°, Clothes 60°, Savings 60°, Other 30°.

1. Completed chart; sectors listed above.
2. Clothes and Savings both have 6 students, so each has a sector angle of 60°.

Chart 4 – Colours of Cars in a Car Park (60 cars)

1. Completed table:

Colour	No.	Fraction	Angle
White	20	$\frac{1}{3}$	120°
Black	15	$\frac{1}{4}$	90°
Silver	12	$\frac{1}{5}$	72°
Red	9	$\frac{3}{20}$	54°
Other	4	$\frac{1}{15}$	24°
Total	60	1	360°

2. Completed pie chart using the sector angles in the table.

3. White angle:

$$\frac{20}{60} \times 360 = \frac{1}{3} \times 360 = 120^\circ.$$

4. Black fraction = $\frac{15}{60} = \frac{1}{4}$.

5. Angle sum check:

$$120 + 90 + 72 + 54 + 24 = 360^\circ.$$

Chart 5 – Languages Spoken at Home (survey of 90 students)

1. Completed table:

Language	No.	Fraction	Angle
English	45	$\frac{1}{2}$	180°
Urdu	18	$\frac{1}{5}$	72°
Polish	9	$\frac{1}{10}$	36°
Punjabi	9	$\frac{1}{10}$	36°
Other	9	$\frac{1}{10}$	36°
Total	90	1	360°

2. Completed pie chart using: English 180° , Urdu 72° , Polish/Punjabi/Other 36° each.

3. Polish, Punjabi and Other each have 9 speakers, so each sector is

$$\frac{9}{90} \times 360 = \frac{1}{10} \times 360 = 36^\circ.$$

4. English fraction = $\frac{45}{90} = \frac{1}{2}$.

5. **Challenge:** new total = 100, new Polish speakers = 19, so new Polish sector

$$\frac{19}{100} \times 360 = 68.4^\circ$$

(accept 68° or 69°).