

Circle Data Detectives

Use circle measurements to uncover pi.

GRADE 6 • 6.MG.1.c

6.MG.1.c "Develop an approximation for pi (3.14) by gathering data and comparing the circumference to the diameter of various circles, using concrete manipulatives or technological models."

NAME _____

DATE _____

COMPARE THE MEASUREMENTS

Divide a circle's circumference by its diameter. The quotient is close to pi, which is about 3.14.

WORKED EXAMPLE

A circle has circumference 25.12 cm and diameter 8 cm. Find C/d.

1. Write the ratio: $25.12/8$.
2. Divide: $25.12/8 = 3.14$.
3. The measurement ratio is about pi.

Answer: 3.14

PRACTICE 5 problems

- 1** A circle has $C = 28.26$ cm and $d = 9$ cm. Find C/d.

ANSWER _____

- 2** A circle has $d = 11$ cm. Use pi about 3.14 to find C.

ANSWER _____

- 3** A circle has $C = 43.96$ cm. Use pi about 3.14 to find d.

ANSWER _____

- 4** A circle has $C = 53.38$ cm and $d = 17$ cm. Find C/d.

ANSWER _____

- 5** Which data pair is closer to pi: $d = 19$ cm, $C = 59.66$ cm, or $d = 19$ cm, $C = 60.8$ cm?

ANSWER _____

APPLY IT Show your work

- 1** A gaming club measures a round prize wheel. Its diameter is 22 cm and its circumference is 69.08 cm. What value for pi does the data show?

WORK SPACE

ANSWER _____

- 2** A maker club wraps string around a circular badge and measures 81.64 cm. The badge's diameter is 26 cm. What value for pi does the data show?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Three circles have these measurements: $C = 50.24$ cm, $d = 16$ cm; $C = 65.94$ cm, $d = 21$ cm; $C = 75.12$ cm, $d = 24$ cm. Find each C/d value. Then find their mean and round it to the nearest hundredth. Explain why this is a reasonable estimate for pi.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A circle has $C = 28.26$ cm and $d = 9$ cm. Find C/d .	3.14
2	A circle has $d = 11$ cm. Use pi about 3.14 to find C .	34.54 cm
3	A circle has $C = 43.96$ cm. Use pi about 3.14 to find d .	14 cm
4	A circle has $C = 53.38$ cm and $d = 17$ cm. Find C/d .	3.14
5	Which data pair is closer to pi: $d = 19$ cm, $C = 59.66$ cm, or $d = 19$ cm, $C = 60.8$ cm?	$d = 19$ cm and $C = 59.66$ cm, because $59.66/19 = 3.14$.

PART 2 • APPLY IT

1. **3.14** Divide circumference by diameter: $69.08/22 = 3.14$.
2. **3.14** Divide circumference by diameter: $81.64/26 = 3.14$.

CHALLENGE

The ratios are **3.14**, **3.14**, and **3.13**. Their mean is **3.136666...**, which rounds to **3.14**. The **3.13** value is a small measurement difference, so the mean is close to pi.

Accept 3.136... or 3.136666... for the challenge mean before rounding. Accept answers with correct units where units are requested.