

Pi Day maths for CBSE Class 10: answers

CBSE Math Revision · CBSE Class 10 (Class 9 can try most of it) · 14 March · Teacher answers and notes

No calculator. Use $\pi = 22/7$ where a question says so.

Teacher notes

- Pi Day is 14 March because 3/14, written month first, matches $\pi = 3.14...$
- Task A links to the Real numbers chapter: $22/7$ is rational (its decimal repeats), π is irrational.
- Pool the class's dart results in task B: more throws give a better estimate.

Starter

1. **44 cm**
 - $2 \times 22/7 \times 7 = 44$
2. **616 cm²**
 - $22/7 \times 14 \times 14 = 616$
3. **6 (the block 142857)**
 - The digits 142857 repeat for ever.
4. **$\pi/4$**
 - Circle area $\pi \div$ square area 4

Task A: Fractions and π

- a. **142857**
 - $22 \div 7 = 3$ remainder 1; then $10 \div 7$, $30 \div 7$, $20 \div 7$, $60 \div 7$, $40 \div 7$, $50 \div 7$ give 1, 4, 2, 8, 5, 7, and the remainder 1 comes back.
 - So $22/7 = 3.142857142857...$
- b. **$-1/791$**
 - $(355 \times 7 - 22 \times 113)/(113 \times 7) = (2485 - 2486)/791 = -1/791$
- c. **377/120**
 - $(355 + 22)/(113 + 7) = 377/120$
 - Check: $355/113 = 3.14159...$, $377/120 = 3.14166...$, $22/7 = 3.14285...$

Task B: π from a dartboard

- a. **616 cm², 784 cm², 11/14**
 - $22/7 \times 14 \times 14 = 616$; $28 \times 28 = 784$
 - $616/784 = 11/14$
- b. **550**
 - $700 \times 11/14 = 550$
- c. **3.12**
 - $546/700$ is about $\pi/4$, so π is about $4 \times 546/700 = 2184/700 = 3.12$

Task C: Wheels and tracks

a. **220 cm; 500 turns**

- $2 \times 22/7 \times 35 = 220 \text{ cm}$
- $1.1 \text{ km} = 110\,000 \text{ cm}$, and $110\,000 \div 220 = 500$

b. **3234 m²**

- $22/7 \times (77^2 - 70^2) = 22/7 \times (77 - 70)(77 + 70) = 22/7 \times 7 \times 147 = 3234$

c. **44 m**

- $2\pi \times 77 - 2\pi \times 70 = 2\pi \times 7 = 2 \times 22/7 \times 7 = 44$

Extension

1. **304/105**

- $1 - 1/3 + 1/5 - 1/7 = 76/105$
- $4 \times 76/105 = 304/105$ (about 2.9: this series needs many terms).

2. **42 cm²**

- $196 - 22/7 \times 7 \times 7 = 196 - 154 = 42$

Every question is original and every answer was recomputed by computer before publishing.