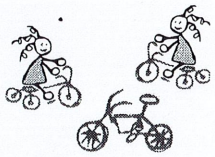
AMC8 Sampler for Discussion (2003) Name _____

4. A group of children riding on bicycles and tricycles rode past Billy Bob's house. Billy Bob counted 7 children and 19 wheels. How many tricycles were there?



(A) 2 **(B)** 4 **(C)** 5 **(D)** 6 **(E)** 7

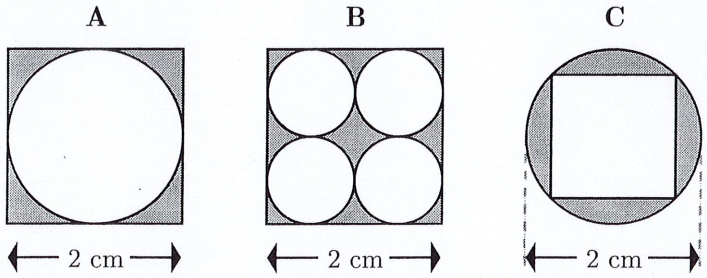
16. Ali, Bonnie, Carlo and Dianna are going to drive together to a nearby theme park. The car they are using has four seats: one driver's seat, one front passenger seat and two back seats. Bonnie and Carlo are the only two who can drive the car. How many possible seating arrangements are there?

(A) 2 **(B)** 4 **(C)** 6 **(D)** 12 **(E)** 24

20. What is the measure of the acute angle formed by the hands of a clock at 4:20 a.m.?

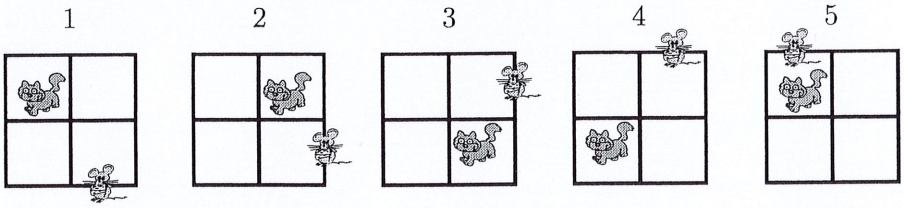
(A) 0° **(B)** 5° **(C)** 8° **(D)** 10° **(E)** 12°

22. The following figures are composed of squares and circles. Which figure has a shaded region with largest area?

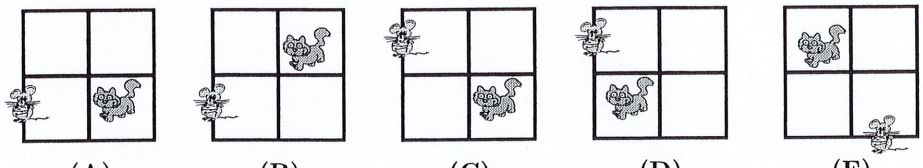


(A) A only **(B)** B only **(C)** C only **(D)** both A and B **(E)** all are equal

23. In the pattern below, the cat moves clockwise through the four squares and the mouse moves counterclockwise through the eight exterior segments of the four squares.



If the pattern is continued, where would the cat and mouse be after the 247th move?



(A) **(B)** **(C)** **(D)** **(E)**

AMC8 Sampler for Discussion (2003) Name Boyd's Work

4. A group of children riding on bicycles and tricycles rode past Billy Bob's house. Billy Bob counted 7 children and 19 wheels. How many tricycles were there?

(A) 2 (B) 4 (C) 5 (D) 6 (E) 7

Tip! Write equations. $b+t=7$, $2b+3t=19$, $2(7-t)+3t=19$

Tip 2 Go to an extreme and back off from there. All tricycles would be $7\times3=21$.

16. Ali, Bonnie, Carlo and Dianna are going to drive together to a nearby theme park. The car they are using has four seats: one driver's seat, one front passenger seat and two back seats. Bonnie and Carlo are the only two who can drive the car. How many possible seating arrangements are there?

(A) 2 (B) 4 (C) 6 (D) 12 (E) 24

B C A D → 3!

C A D B → 3!

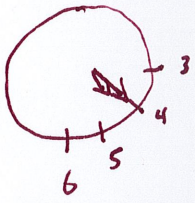
Tip Set up slots to help you visualize

20. What is the measure of the acute angle formed by the hands of a clock at 4:20 a.m.?

(A) 0° (B) 5° (C) 8° (D) 10° (E) 12°

Tip Make a sketch.

$\frac{1}{3}(30^\circ)=10^\circ$



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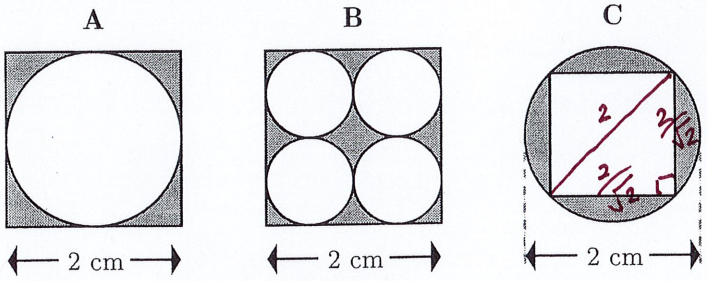


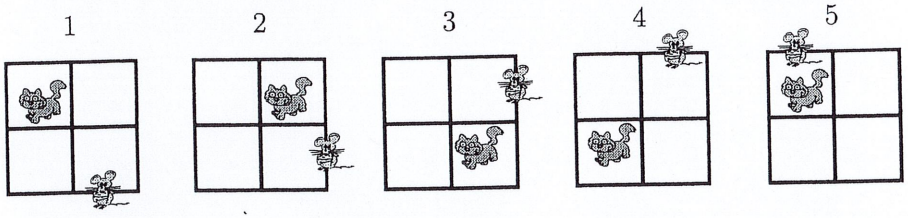
(A) A only (B) B only (C) C only (D) both A and B (E) all are equal

Tip 1 Use subtractive logic in terms of π.

A: $4-\pi$ B: $4-4\left(\left(\frac{1}{2}\right)^2\pi\right)=4-\pi$ C: $\pi-2$

Tip 2 Know your special right triangles. 45-45-90 here.

23. In the pattern below, the cat moves clockwise through the four squares and the mouse moves counterclockwise through the eight exterior segments of the four squares.



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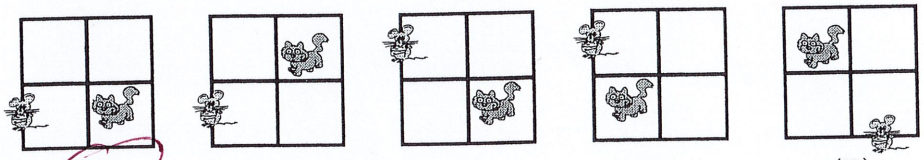
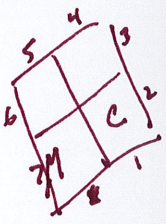


Tip Use some easy modular arithmetic logic focused on remainders.



$\frac{247}{4}$ = rem 3

$\frac{247}{8}$ = rem 7