

WBGMC SAMPLE PROBLEMS

SAMPLE 1-POINT PROBLEMS

- (1) Compute the sum

$$\sum_{i=1}^{50} (2i - 1) = 1 + 3 + 5 + 7 + \cdots + 99.$$

- (2) What is the angle between the hour hand and the minute hand at 3:40 pm?



FIGURE 1. A 3:40 pm clock

- (3) Anfisa is 10 years and her sister is 2 years old now. After how many years will Anfisa's age be double her sister's?

SAMPLE 2-POINT PROBLEMS

- (1) Calculate the area of the shaded region in Figure 2.

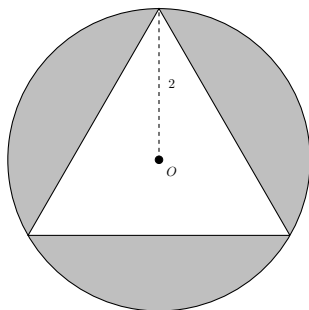


FIGURE 2

- (2) How many consecutive zeros are at the end of the number $100! = 1 \times 2 \times 3 \times \cdots \times 100$?
- (3) Anfisa drove from City A to City B with constant speed in 5 hours. She drove back 15 mph faster and was able to return 1 hour faster. How far are City A and City B?

SAMPLE 3-POINT PROBLEMS

- (1) Calculate the area of the shaded region in Figure 3.

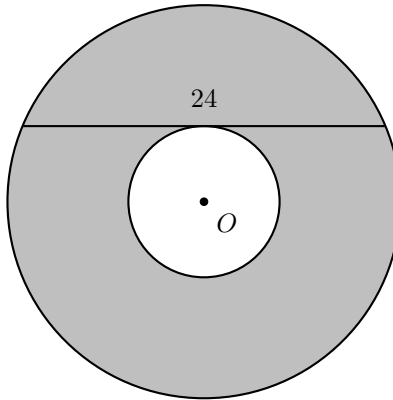


FIGURE 3

- (2) Compute the product

$$\prod_{i=2}^{100} \left(1 - \frac{1}{i^2}\right) = \left(1 - \frac{1}{2^2}\right) \left(1 - \frac{1}{3^2}\right) \left(1 - \frac{1}{4^2}\right) \cdots \left(1 - \frac{1}{100^2}\right).$$

- (3) An equilateral triangle of side length $3\sqrt{5}$ is placed inside a sphere of radius 6. What is the distance between the center of the sphere and the plane which the triangle lies on?