3 The sum of 25 consecutive even integers is 10,000. What is the largest of these 25 consecutive integers? (2016 AMC 8 Problems, Question #19)

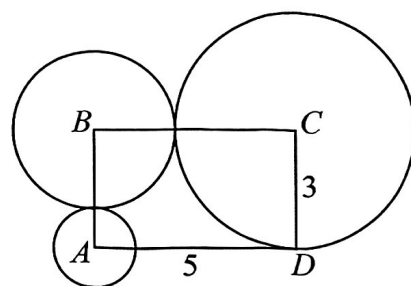A. 360   B. 388   C. 412   D. 416   E. 424

4 Rectangle $ABCD$ has sides $CD = 3$ and $DA = 5$. A circle of radius 1 is centered at A, a circle of radius 2 is centered at B, and a circle of radius 3 is centered at C. Which of the following is closest to the area of the region inside the rectangle but outside all three circles? (2014 AMC 8 Problem, Question #20)

A. 3.5   B. 4.0   C. 4.5   D. 5.0   E. 5.5

5 The large circle has diameter AC. The two small circles have their centers on AC and just touch at O, the center of the large circle. If each small circle has radius 1, what is the value of the ratio of the area of the shaded region to the area of one of the small circles? (1986 AMC 8 Problem, Question #23)
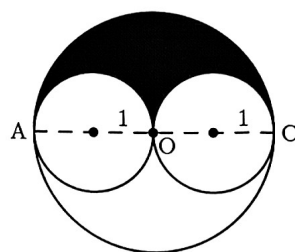
A. between $\dfrac{1}{2}$ and 1

B. 1

C. between 1 and $\dfrac{3}{2}$

D. between $\dfrac{3}{2}$ and 2

E. cannot be determined from the information given

The cyclist went up the hill with the speed of 12 km/h and went down the hill with the speed of 20 km/h. The ride up the hill took him 16 minutes longer than the ride down the hill. How many minutes did it take the cyclist to go down the hill? (2002 Math Kangaroo Problem, Level 5 – 6, Question #24)
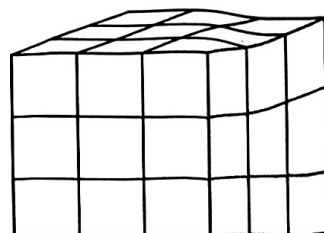
A. 24　　　　B. 40　　　　C. 32　　　　D. 16　　　　E. 28

Lesson 10

1 How many pairs of parallel edges, such as $\overline{AB}$ and $\overline{GH}$ or $\overline{EH}$ and $\overline{FG}$, does a cube have? (2015 AMC 8 Problem, Question #12)
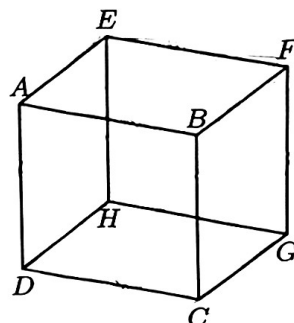
A. 6 B. 12 C. 18 D. 24 E. 36

2 Each corner cube is removed from this $3\,cm \times 3\,cm \times 3\,cm$ cube. The surface area of the remaining figure is _____ cm^2. (1997 AMC 8 Problem, Question #21)
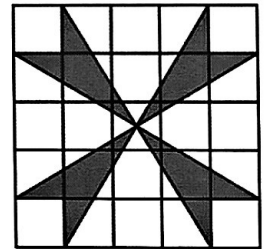
A. 19 B. 24 C. 30 D. 54 E. 72

5 Nine small identical cuboids as shown in *figure* 1 are used to form a large cuboid as shown in *figure* 2. Given that the volume of the small cuboid is 750, what is the surface area of the large cuboid?

figure1   figure2
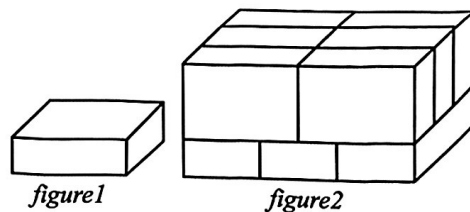
Lesson 12

2 What is the area of the shaded part shown in the 5×5 grid? (2007 AMC 8 Problem, Question #23)

A. 4   B. 6   C. 8   D. 10   E. 12

5 Jamal has a drawer containing 6 green socks, 18 purple socks, and 12 orange socks. After adding more purple socks, Jamal noticed that there is now a 60% chance that a sock randomly selected from the drawer is purple. How many purple socks did Jamal add? (2020 AMC 8 Problem, Question #13)

A. 6   B. 9   C. 12   D. 18   E. 24

Lesson 15

1 79 is divided by an integer and gets the remainder 4. What are the possible values of the integer?

2 When divided by an integer larger than 1, both 55 and 37 get the same remainder. What are the possible values of the integer?

3 Every day at school, Klaus climbs a flight of 12 stairs. Klaus can take the stairs 1 or 2 at a time. For example, Klaus could climb 2 stairs, and then 1 stair. In how many ways can Klaus climb the stairs? (adapted from 2010 AMC 8 Problem, Question #25)

5) Toothpicks are used to make a grid that is 60 toothpicks long and 32 toothpicks wide. How many toothpicks are used altogether? (2013 AMC 8 Problem, Question #22)
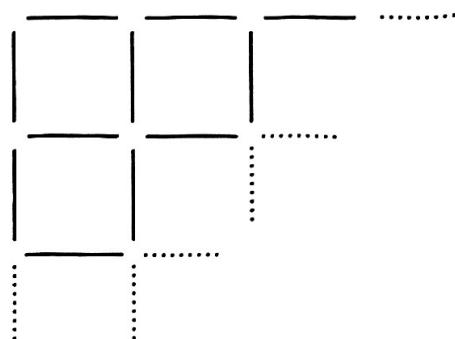
A. 1920   B. 1952   C. 1980   D. 2013   E. 3932

4 The two circles pictured have the same center C. Chord $\overline{AD}$ is tangent to the inner circle at B, AC is 10, and chord $\overline{AD}$ has length 16. What is the area between the two circles? (2010 AMC Problem, Question #19)

A. 36π B. 49π C. 64π D. 81π E. 100π
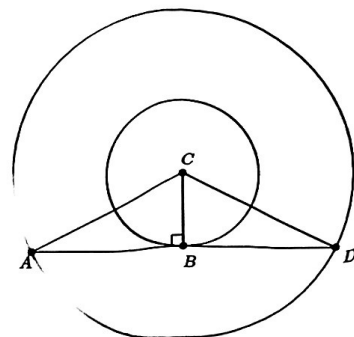
3 In Princess Belle's castle, the bathroom on a 1 : 40 scale floor plan is a square with a side length of 12 cm. The actual area of the bathroom of Princess Belle's castle is _____ m²