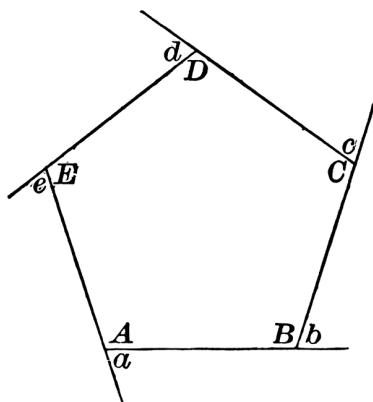


Problem 1. Cagney can frost a cupcake every 20 seconds and Lacey can frost a cupcake every 30 seconds. Working together, how many cupcakes can they frost in 5 minutes?

Problem 2. Ray's car averages 40 miles per gallon of gasoline, and Tom's car averages 10 miles per gallon of gasoline. Ray and Tom each drive the same number of miles. What is the cars' combined rate of miles per gallon of gasoline?

Problem 3. Find $a + b + c + d + e$



Problem 4. Real numbers x and y satisfy the equation $x^2 + y^2 = 10x - 6y - 34$. What is $x + y$?

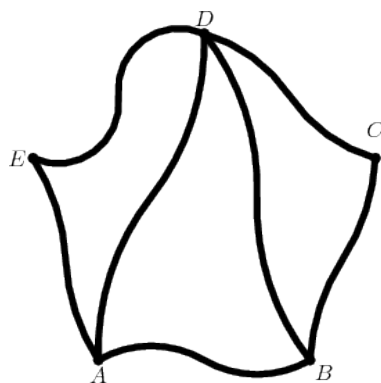
Problem 5. Line l_1 has equation $3x - 2y = 1$ and goes through $A = (-1, -2)$. Line l_2 has equation $y = 1$ and meets line l_1 at point B . Line l_3 has positive slope, goes through point A , and meets l_2 at point C . The area of $\triangle ABC$ is 3. What is the slope of l_3 ?

Problem 6. A large candle is 119 centimeters tall. It is designed to burn down more quickly when it is first lit and more slowly as it approaches its bottom. Specifically, the candle takes

10 seconds to burn down the first centimeter from the top, 20 seconds to burn down the second centimeter, and $10k$ seconds to burn down the k -th centimeter. Suppose it takes T seconds for the candle to burn down completely. Then $\frac{T}{2}$ seconds after it is lit, the candle's height in centimeters will be h . Find $10h$.

Problem 7. Two bees start at the same spot and fly at the same rate in the following directions. Bee A travels 1 foot north, then 1 foot east, then 1 foot upwards, and then continues to repeat this pattern. Bee B travels 1 foot south, then 1 foot west, and then continues to repeat this pattern. In what directions are the bees traveling when they are exactly 10 feet away from each other?

Problem 8. Cities A , B , C , D , and E are connected by roads \widetilde{AB} , \widetilde{AD} , \widetilde{AE} , \widetilde{BC} , \widetilde{BD} , \widetilde{CD} , and \widetilde{DE} . How many different routes are there from A to B that use each road exactly once? (Such a route will necessarily visit some cities more than once.)



Problem 9. The sums of three whole numbers taken in pairs are 12, 17, and 19. What is the middle number?

Problem 10. Find all ordered triples (x, y, z) which satisfy the equations:

$$xy + x + y = 11$$

$$xz + x + z = 17$$

$$yz + y + z = 23$$