Question 1:

How many positive numbers strictly less than 200 are divisible by either 6 or 10?

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 1:

How many positive numbers strictly less than 200 are divisible by either 6 or 10?

Answer: 46

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 2:

Write a quadratic equation with positive integer coefficients whose roots are the reciprocals of those of the equation $6x^2 + 11x + 4 = 0$ and whose leading coefficient is the smallest positive integer possible.

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 2:

Write a quadratic equation with positive integer coefficients whose roots are the reciprocals of those of the equation $6x^2+11x+4=0$ and whose leading coefficient is the smallest positive integer possible.

Answer: $4x^2+11x+6=0$

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 3:

A rectangle has a perimeter 22 and an area 30. What is the exact value of the length of the rectangle's diagonal?

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 3:

A rectangle has a perimeter 22 and an area 30. What is the exact value of the length of the rectangle's diagonal?

Answer: $\sqrt{61}$

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 4:

Find p so that the roots of $x^3 + 2px^2 - px + 10 = 0$ are integers in an arithmetic progression.

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 4:

Find p so that the roots of $x^3 + 2px^2 - px + 10 = 0$ are integers in an arithmetic progression.

Answer: $p = -3$

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 5:

Find all solutions x to the equation:

$$(\ln x)^2 = \ln\left(x^2\right).$$

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 5:

Find all solutions x to the equation:

$$(\ln x)^2 = \ln\left(x^2\right).$$

Answer: $x = 1$ and $x = e^2$

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 6:

Find the area of the region which lies between the curves

$$x^2 + (y+1)^2 = 1 \qquad \text{and} \qquad x^2 + y^2 = 5$$

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 6:

Find the area of the region which lies between the curves

$$x^2 + (y+1)^2 = 1 \qquad \text{and} \qquad x^2 + y^2 = 5$$

Answer: 4π

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 7:

Solve for x:

$$|x + 2| = |x - 2|.$$

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 7:

Solve for x:

$$|x+2| = |x-2|.$$

Answer: $x = 0$

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 8:

What's the smallest number of people required to ensure that at least 4 have their birthdays in the same month?

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 8:

What's the smallest number of people required to ensure that at least 4 have their birthdays in the same month?

Answer: 37

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 9:

Your dresser drawer contains 7 red socks and 9 blue socks. You pull two from the drawer at random. What is the probability that the socks match? Give your answer in decimal form.

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 9:

Your dresser drawer contains 7 red socks and 9 blue socks. You pull two from the drawer at random. What is the probability that the socks match? Give your answer in decimal form.

Answer: 0.475

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 10:

Suppose one randomly removes half of a standard deck of 52 cards without looking at them, and then randomly draws two cards simultaneously from the remaining of the deck. What is the probability that the two cards drawn are a pair of aces? Give your answer in decimal form.

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 10:

Suppose one randomly removes half of a standard deck of 52 cards without looking at them, and then randomly draws two cards simultaneously from the remaining of the deck. What is the probability that the two cards drawn are a pair of aces? Give your answer in decimal form.

Answer: 0.004525

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 11:

Compute the area of the region enclosed by the graph

$$|2x - 10| + |5y - 10| = 20.$$

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .

Question 11:

Compute the area of the region enclosed by the graph

$$|2x - 10| + |5y - 10| = 20.$$

Answer: 80

See Answer . . . . . See Next Question . . . . . Skip Next Question . . . . . .