

An ice skater has a moment of inertia of 5.0 kgm² when her arms are outstretched. at this time she is spinning at 3.0 revolutions per second (rps). if she pulls in her arms and decreases her moment of inertia to 2.0 kgm², how fast will she be spinning?

With arms outstretched,

Moment of inertia is $I = 5.0 \text{ kg}\cdot\text{m}^2$.

Rotational speed is $\omega = (3 \text{ rev/s}) \cdot (2\pi \text{ rad/rev}) = 6\pi \text{ rad/s}$

The torque required is

$$T = I\alpha = (5.0 \text{ kg}\cdot\text{m}^2) \cdot (6\pi \text{ rad/s}) = 30\pi$$

Assume that the same torque drives the rotational motion at a moment of inertia of $2.0 \text{ kg}\cdot\text{m}^2$.

If ω = new rotational speed (rad/s), then

$$T = 2I\omega = 30\pi$$

$$\omega = 15\pi \text{ rad/s}$$

$$= (15\pi \text{ rad/s}) \cdot (1 \text{ rev}/2\pi \text{ rad})$$

$$= 7.5 \text{ rev/s}$$

Answer: 7.5 revolutions per second.

HELP SOLVE!!!! $|-8+x| > 5$

System of Linear Equations In Exercises 25–38, solve the system using either Gaussian elimination with back-substitution or Gauss-Jordan elimination.

HELP! URGENT!! 15 POINTS Factors achieved by corporations were:

sensitivity to the worker

cheaper production

reduced unemployment

product reliability

safety standards

Barry has an ice tray that makes ice cubes shaped like a cone with a diameter of 2 cm and height of 2 cm. To the nearest cubic centimeter, what is the volume of

an ice cube from Barry's tray?

The Polynesians discovered this island and called it "heaven" in their language. Tahiti

Samoa

Australia

Hawaii

(1 point) An object moves along a straight track from the point $(5, 4, 3)$ to the point $(2, 13, 6)$. The only force acting on it is a constant $F = 2i + 2j + 3k$ newtons. Find the work done if the distance is measured in meters. Work = joules.

Was it north or south that people could pay \$300 to avoid being drafted

Line m passes through point $(2, -7)$ and $(4, -9)$. Line m is parallel to which line?

what are some literal, interpretive, and evaluative information about the book now is the time for running?

The colonists had been protesting and resisting British rule for years, but rejecting the authority of the British government was a serious matter. Why did the colonists choose to write a formal Declaration of Independence? A. The Declaration was primarily written to win sympathy and support from other nations, and enemies of Great Britain.

B. British law required any colony seeking independence to submit a formal declaration.

C. The colonies were requesting financial and military assistance from France, which required a written declaration to give aid.

D. Members of the Continental Congress believed it was necessary to justify the reasons for declaring independence, and identify the basic principles of legitimate government.

The elements in period 4 on the periodic table are arranged in order to increase

A greyhound's velocity changes from rest to 19 m/s in 2 seconds. What is the greyhound's average acceleration?

The Alan Company bought 80 tickets for a jazz company. After giving away 20 tickets to customers, the company sold the rest to the employees for half of the purchase price. If the company absorbed a \$1,000 loss on all tickets, how much did an employee pay for a ticket.

The function $f(r)$ gives the area of a circle with radius r it can be written in equation form $f(r) = 3.14r^2$ What is $f(3)$

The principles of probability help bridge the worlds of _____ statistics and _____ statistics.

"an in the news article titled "selling "pure water": a \$billion scam?" refers to the use of advertising. when a firm successfully advertises its product, the firm"

What is the density of a 700 kg object with a volume of 649 m³? (Density: $D = \frac{m}{V}$) 0.927 kg/m³ .4543 kg/m³ 1.079 kg/m³ 4.543 kg/m³

Which word describes something that is a part of a country's nonmaterial culture

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