

Isolating quantities

$$A = 2\pi r^2 + 2\pi r h$$

The surface area, A , of a cylinder of radius, r , and height, h , can be found with the equation above. Which of the following correctly shows the cylinder's height in terms of its radius and surface area?

A $h = r - \frac{A}{2\pi r}$

B $h = \frac{A}{2\pi r} - r$

C $h = r - \frac{A}{r}$

D $h = \frac{A}{r} - r$

$$A = \frac{1}{2}(b_1 + b_2)h$$

The area, A , of a trapezoid that has a height, h , and bases, b_1 and b_2 , can be found by using the equation above. Which of the following correctly shows the trapezoid's height in terms of its area and 2 bases?

A $h = \frac{A}{2}(b_1 + b_2)$

B $h = \frac{2}{A(b_1 + b_2)}$

C $h = \frac{A}{2(b_1 + b_2)}$

D $h = \frac{2A}{(b_1 + b_2)}$

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$$2d \sin(\theta) = \lambda$$

Molecules in many solids are arranged in a crystal lattice with distinct patterns and layers. These layers reflect and scatter light rays according to Bragg's law. The Bragg equation relates the distance, d , between layers of molecules to the angle, θ , of incoming light rays with wavelength λ . Which of the following is the correct equation for the distance in terms of the angle and the wavelength?

A $d = \frac{\lambda}{2 \sin(\theta)}$

B $d = \frac{2\lambda}{\sin(\theta)}$

C $d = \frac{2 \sin(\theta)}{\lambda}$

D $d = \frac{\sin(\theta)}{2\lambda}$

$$H = \frac{kA \Delta T}{L}$$

The rate of heat transfer, H , of a material can be expressed in terms of its thermal conductivity, kA , the change in temperature of the material, ΔT , and the thickness of the material, L , as shown in the equation above. Which of the following correctly expresses the thermal conductivity of a material in terms of its thickness, its change in temperature, and its rate of heat transfer?

A $kA = \frac{\Delta T}{HL}$

B $kA = \frac{HL}{\Delta T}$

C $kA = HL \Delta T$

D $kA = \frac{H \Delta T}{L}$

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$$C = 1.2272M + 3.0556F$$

An English teacher uses the equation above to give the composite score, C , on the final exam, given M correct multiple choice answers and F points on the free response questions. Which of the following equations correctly gives the number of correct multiple choice answers in terms of the composite score and the number of points on the free response questions?

(A) $M = \frac{C - 3.0556F}{1.2272}$

(B) $M = \frac{C}{1.2272} - 3.0556F$

(C) $M = \frac{3.0556F - C}{1.2272}$

(D) $M = \frac{3.0556F}{1.2272} - C$
