Advanced Complete MathSmart®

Section 1:
Basic Problem-solving Questions

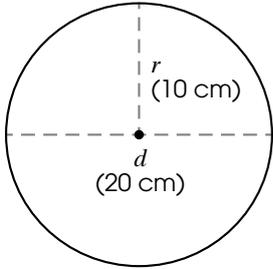# Contents

Section 2:
Critical-thinking Questions

Circles

solving a variety of word problems that involve properties of circles, such as radius, diameter, circumference, and area
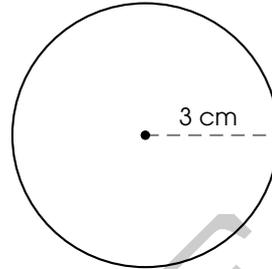
Math Skills

①

radius (*r*)

_____ cm

diameter (*d*)

_____ cm

r (10 cm)
d (20 cm)

Circumference (C) = 2πr or πd

$2\pi r$

$= 2 \times 3.14 \times$ ☐

$=$ ☐ (cm)

Area (A) = πr²

πr^2

$= 3.14 \times$ ☐^{2}

$=$ ☐ (cm²)

②

3 cm

$r =$ _____

$d =$ _____

$C =$

$A =$

③

A 2.5 cm

B 8 m

C 4 cm

D 3.5 m
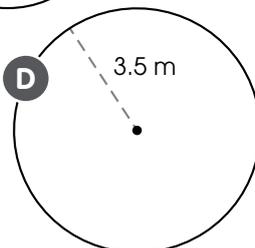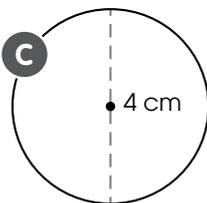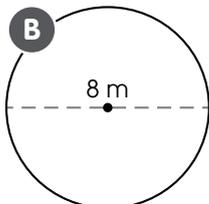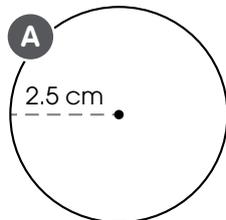
	Circumference	Area
A	_____ cm	_____ cm²
B	_____	_____
C	_____	_____
D	_____	_____

⑦ A round mirror has an area of 0.1 m². What is the diameter of the mirror in centimetres?

⑧ A Canadian toonie is made up of an inner circle with an outer ring. What is the area of the outer ring?

← 28 mm →

← 17 mm →

⑨ A tile design has a circle inside a square. What is the total area of the shaded parts?

15 cm
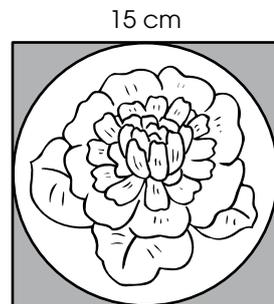
⑩ Josephine measured her finger for a ring. She wrapped tape measure around her finger and measured 57 mm. What would the size of her ring be?

Ring Size	Diameter (mm)
7	17.3
8	18.2
9	19.0
10	19.8

① Company A sells a $1029 phone at 15% off, while Company B sells the phone for $34.25 cheaper than the discounted price of Company A after a 12% discount. How much did Company B sell the phone for originally?
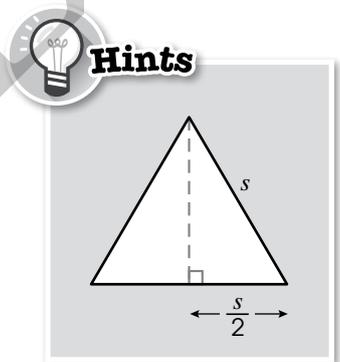
Discounted price at Company A: _____ × (1 – _____) = _____

Discounted price at Company B: _____ – _____ = _____

Original price at Company B: _____ ÷ (1 – _____) = _____

Company B sold the phone for _____ originally.

② Find a polynomial that describes the area of an equilateral triangle with a side length of s. Keep the numbers as square roots.

Hints

③ A coaster has a regular hexagon where each vertex lies on the edge of the circle as shown. If the coaster has a diameter of 8 cm, what is the area of the shaded part?

equilateral triangle
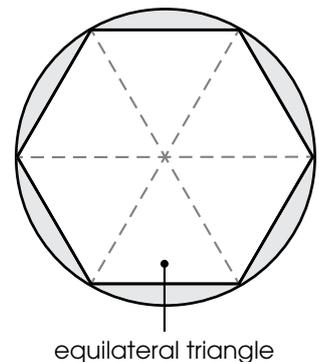
Topics covered:

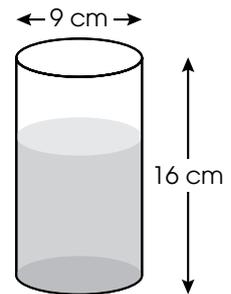| **Question 1**	**Question 2**	**Question 3**
• decimals	• Pythagorean relationship	• circles
• percents	• polynomials	• Pythagorean relationship

④ In a studio audience of 400 people, 85.75% are adults. If 2 members of the audience are picked at random, what is the probability that they are both children?

⑤ What is the value of x?

$2\frac{1}{3}x^3 + 30$

$1\frac{1}{3}x^3$

$2x^3 - 3$
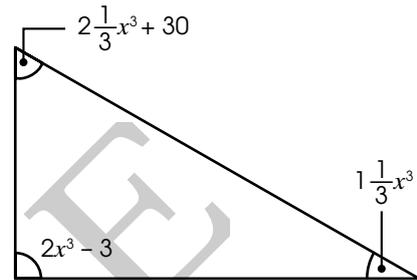
⑥ How much water in millimetres can be added if the cylindrical glass is $\frac{2}{3}$ full?

←9 cm→

16 cm

⑦ A spherical sponge has a diameter of 10 cm. When soaked, its surface area increases by 44%. What is the diameter of the sponge when soaked?

Topics covered:

Question 4	**Question 5**	**Question 6**	**Question 7**
• percents	• angles	• fractions	• percents
• probability	• equations	• volume	• surface area
			• equations