Nova Scotia Examinations

Mathematics 10

Question Sampler

NOVA SCOTIA

87901

Notice to users

The purpose of this question sampler is to give students and teachers an idea of the format of the examination.

It is not a complete practice examination, nor does it meet the examination tables of specifications. Please consult the Information Guide for information on examination specifications.

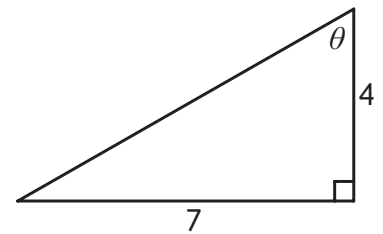**1** In which triangle is the value of $\sin\theta$ the greatest?

ⓐ

ⓑ

ⓒ

ⓓ
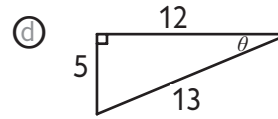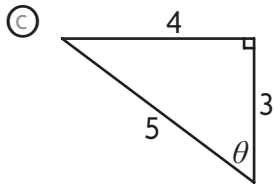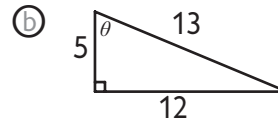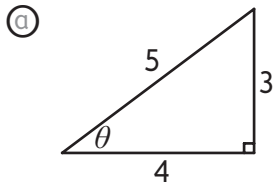
2 Which trigonometric expression could be used to determine the measure of angle θ?

ⓐ $\sin^{-1}\left(\dfrac{4}{7}\right)$

ⓑ $\tan^{-1}\left(\dfrac{4}{7}\right)$

ⓒ $\cos^{-1}\left(\dfrac{4}{7}\right)$
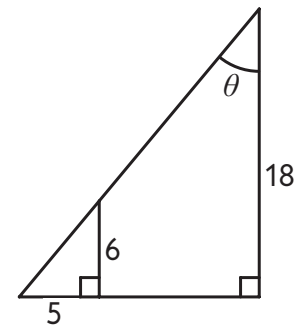
ⓓ $\tan^{-1}\left(\dfrac{7}{4}\right)$
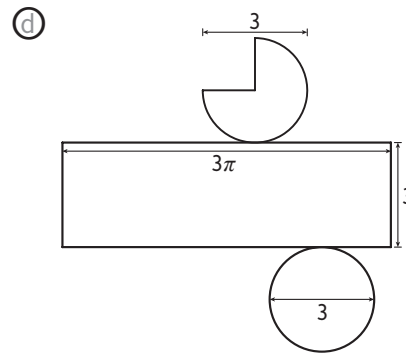
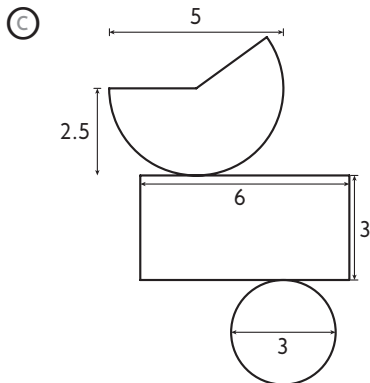**3** What is the value of θ?

ⓐ 33.6°

ⓑ 39.8°

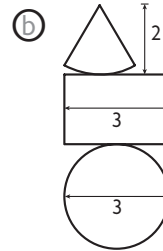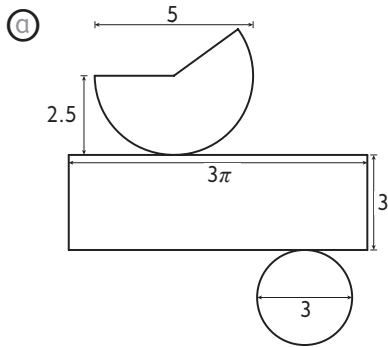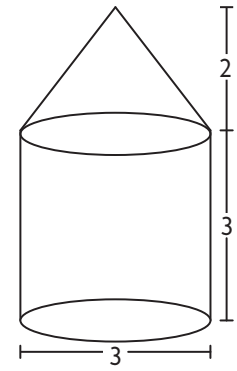ⓒ 50.2°

ⓓ 56.4°

4 Which of the following diagrams could be used to find the surface area of the composite object shown?

(a)

(b)

(c)

(d)

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5 Which of the following measurements is the longest?

120 cm   40 in.   1 m   1 yd.

(a) 120 cm
(b) 40 in.
(c) 1 m
(d) 1 yd.

6 Which equation can be used to find the height of the right square pyramid shown?

10 cm

h

8 cm

ⓐ $h = \sqrt{10^2 - 8^2}$

ⓑ $h = \sqrt{10^2 - 4^2}$

ⓒ $h = \sqrt{10^2 + 8^2}$

ⓓ $h = \sqrt{10^2 + 4^2}$
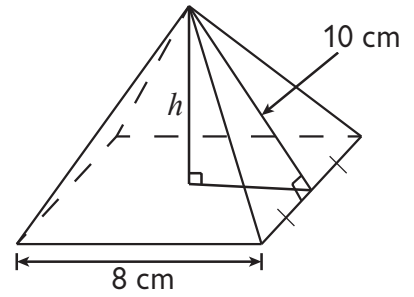
7 Alanna is pulled over for driving 60 mph in a 60 km/h zone. How fast was she driving in km/h?

ⓐ 90 km/h
ⓑ 96.5 km/h
ⓒ 100 km/h
ⓓ 103.5 km/h

8 Which of the following is the best estimate of the height of a standard motorcycle?

ⓐ 25 cm
ⓑ 1 ft.
ⓒ 1 m
ⓓ 0.5 km

9 What is the simplest form of $3\sqrt{48}$?

ⓐ $12\sqrt{3}$
ⓑ $6\sqrt{12}$
ⓒ $7\sqrt{3}$
ⓓ $5\sqrt{12}$

10 Which of the following numbers is **NOT** irrational?

ⓐ $\dfrac{\sqrt{6}}{2}$

ⓑ $\sqrt{7}$

ⓒ π

ⓓ $\sqrt[3]{343}$

11 What is the simplest form of $\left(\sqrt{n}\right)\left(n^{\frac{3}{2}}\right)$?

ⓐ $n^{\frac{7}{2}}$

ⓑ $n^{\frac{3}{4}}$

ⓒ n^{2}

ⓓ $2n^{2}$

12 Given that $x > 1$, which of the following is greatest?

$$\sqrt[3]{x},\ \left(\sqrt{x}\right)^{7},\ x^{\frac{-3}{4}},\ \sqrt[3]{x^{5}}$$

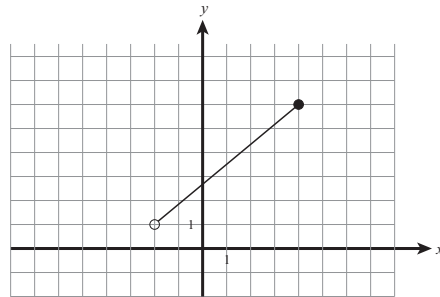ⓐ $\sqrt[3]{x}$

ⓑ $\left(\sqrt{x}\right)^{7}$

ⓒ $x^{\frac{-3}{4}}$

ⓓ $\sqrt[3]{x^{5}}$

13 The area of a rectangle is $2x^2 - 5x - 3$. If the length of one side is $x - 3$, what is the length of the other side?
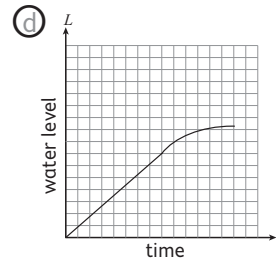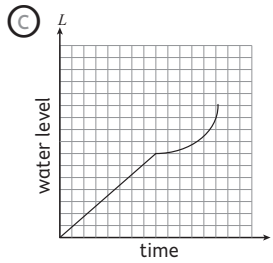
ⓐ $x + 1$

ⓑ $2x + 1$

ⓒ $x - 2$

ⓓ $2x - 3$

14 What is the domain of the following graph?

ⓐ $(-2, 4]$

ⓑ $[-2, 4)$

ⓒ $(1, 6]$

ⓓ $[1, 6)$

15 The container shown is being filled at a constant rate.

Which of the following graphs best illustrates the water level over time?

(a)

(b)

(c)

(d)
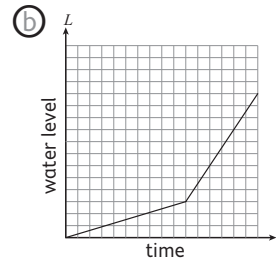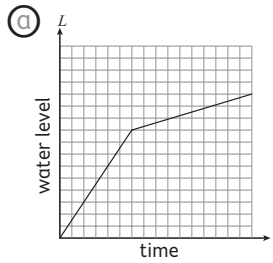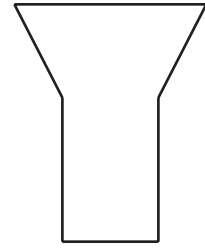
16 Which of the following relations is a function?

(a)

Jan → 28
Feb → 29
Mar → 30
Apr → 31

(b)
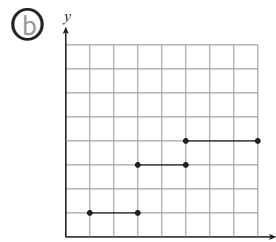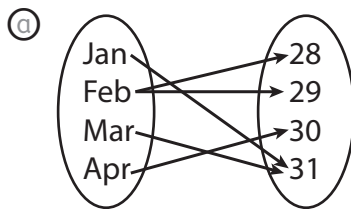
(c) (0, 3)
(1, 4)
(2, 3)
(3, 1)

(d) (NS, Sydney)
(NB, St. John)
(PEI, Summerside)
(NS, Digby)

17 What is the x-intercept of the graph represented by $3y - 4x + 12 = 0$?

ⓐ (3, 0)

ⓑ (0, 4)

ⓒ (−3, 0)

ⓓ (0, −4)

18 Examine the table.

x	y
1	6
2	8
3	10
5	12

Which of the following statements best describes the relation?

ⓐ The table of values represents a linear function since there is a common difference of 2.

ⓑ The table of values represents a linear function since plotting the points would produce a straight line.

ⓒ The table of values does not represent a linear function since the change in x is not constant.

ⓓ The table of values does not represent a linear function because the change in y divided by the change in x is not constant.

19 Given $y = ax + b$, which of the following values are possible for a and b for the graphed line?

ⓐ $a = 3$ and $b = 2$

ⓑ $a = -3$ and $b = 2$

ⓒ $a = 3$ and $b = -2$

ⓓ $a = -3$ and $b = -2$
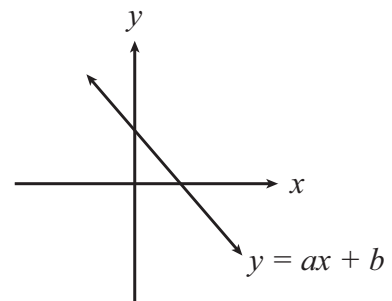
20 Which equation represents the line which passes through (2, 10) and has a slope of 3?

ⓐ $y - 10 = 3(x - 2)$

ⓑ $y - 2 = 3(x - 10)$

ⓒ $y + 10 = 3(x + 2)$

ⓓ $y + 2 = 3(x + 10)$

21 If $g(x) = 4 - 3x$, then what is the value of $g(-2)$?

ⓐ 10

ⓑ −2

ⓒ 2

ⓓ 0.67

22 Sameer purchased a new pair of sneakers for $92.00.

The original price was $135.00.

What was the precentage decrease in price?

ⓐ 43%

ⓑ 47%

ⓒ 32%

ⓓ 68%

23 At Frosty Treats, these are the prices for milkshakes:

Small (16 oz.) ....$3^{00}

Medium (21 oz.) ....$3^{75}

Large (28 oz.) ....$5^{10}

What size offers the best buy?

ⓐ 16 oz.

ⓑ 21 oz.

ⓒ 28 oz.

ⓓ They all have the same value.

24 Darren gets a summer job planting trees.

He is paid 15 cents for each tree that he plants.

What method of earning income best describes how Darren is paid?

ⓐ wages

ⓑ salary

ⓒ piecework

ⓓ commission

25 Who earns the largest yearly salary?

Ian	$1350 biweekly
Janelle	$2900 monthly
Keiko	$18.15 per hour, 40 hours a week
Lahifa	$37 500 yearly

ⓐ Ian

ⓑ Janelle

ⓒ Keiko

ⓓ Lahifa

26 According to the information in the diagram below, can the truck fit through the tunnel?
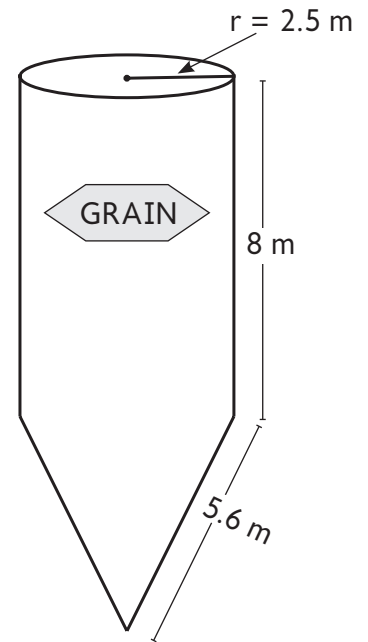Support your answer with calculations.
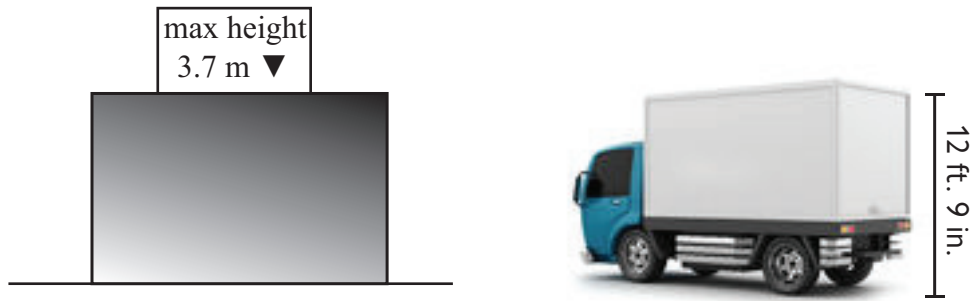
27 A grain silo is full of wheat.

An opening at the bottom allows the wheat to flow out.

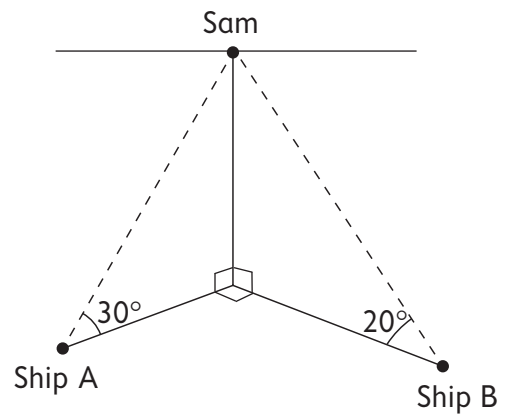The rail cars used to transport the grain from the silo measure 3.1 m by 4.0 m by 2.1 m.

How many rail cars are needed to empty the silo?

r = 2.5 m

GRAIN

8 m

5.6 m

28 Sam stands at the top of a 200 m cliff and observes two ships on the ocean. Sam's position relative to the two ships is shown in the diagram.
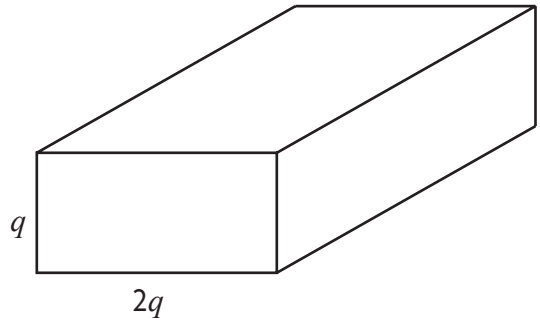
How far apart are the two ships?
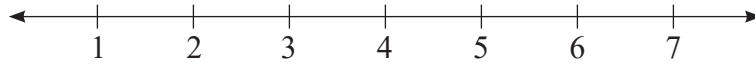*Round your answer to the nearest tenth of a metre.*

29 The volume of the prism shown is $6q^3$.

What is the simplified expression for the surface area of the prism?

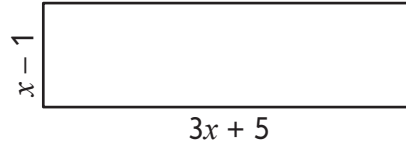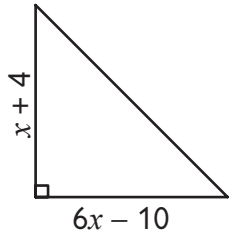**30** Using the number line below, indicate where $\sqrt{27}$ should be placed and justify your choice without converting to a decimal approximation.

31 Expand and simplify $(2p + 4)(p^2 - 3p + 1) - 2p(p^2 - 2)$.

32 If the area of the right triangle is the same as the area of the rectangle, what is the value of x?

33 Organic Pastures Greenhouse sells organic soil at a fixed price per cubic yard. The company also charges a flat fee for delivery (regardless of the size of the order).

Anne ordered 10 cubic yards at a total cost of $135.00.

The following week, Sandy ordered 19 cubic yards at a total cost of $198.00.

What is the company's flat rate delivery charge?

34 Joe had a chance to go to the Bahamas. He brought C$250 with him for spending money.
He had planned to go to the bank to exchange his money into Bahamian Dollars (B$) at a rate
of C$1 = B$0.7391 but he ran out of time.
He exchanged his money at a booth at the airport and they gave him B$175.53.

How much more money could Joe have gotten by exchanging at the bank?

35 Selim is paid $16.34/hr and works 40 hours a week.

He earns 4% commission on all sales.

His average gross weekly income is $2050.02.

What is the value of his average weekly sales?