

Sample Documents

Canadian Math Gr. 8–10
(CM2)

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1. Select the letters that would appear the same after a 180° rotation about the centre.

I. **A** II. **H** III. **R** IV. **S**

- a) I only b) II only c) III only
d) I and III e) II and IV

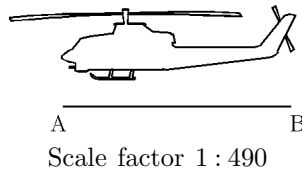
3. The formula for the skin area of a human, A , in square metres is related to the height, h , of the person in centimetres, and their weight, w , in kilograms by the following formula:

$$A = 0.025 \times h^{0.42} \times w^{0.5}$$

What is the approximate ratio of the skin area of two people that are 165 centimetres tall if one weighs 90 kilograms and the other weighs 60 kilograms?

5. Kamini sold two mountain bikes. She made a 30% profit on the first one and a 50% profit on the second one. If her total profit was 45% then what was the ratio of her cost for the first bike to her cost for the second bike?
7. Measure the length of the helicopter (AB) in the picture. Use the scale factor to find the actual length of the helicopter.

- a) 3 cm
b) 4.9 cm
c) 1230 cm
d) 1470 cm
e) 1860 cm

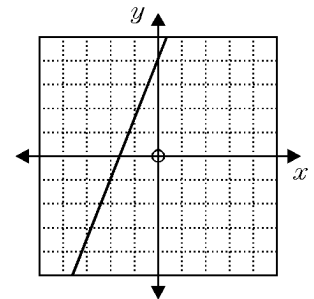


2. Write an algebraic equation for the following: "After 7 is added to a number the sum is divided by 4. The result is 12."

- a) $\frac{n}{4} + 7 = 12$ b) $n + \frac{7}{4} = 12$ c) $\frac{n+7}{4} = 12$
d) $\frac{7n}{4} = 12$ e) $\frac{n}{7} + 4 = 12$

4. Which of the following is the equation of a line *perpendicular* to the line shown in the diagram?

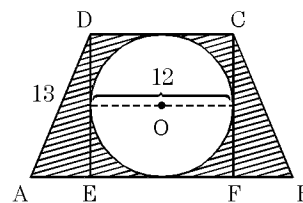
- a) $5x + 2y = 13$
b) $5x - 2y = 17$
c) $2x + 5y = -3$
d) $2x - 5y = 9$
e) $5x + 3y = 11$



6. If $\frac{A(2x^2 + 9x - 5)}{B(2x^2 + 5x - 3)} = 1$, then what is the value of B ?

- a) $x - 5$ b) $x - 3$ c) $x + 2$
d) $x + 3$ e) $x + 5$

8. In the diagram shown, ABCD is an isosceles trapezoid with bases AB and DC, $DA = 13$, CDEF is a square, and circle O has a diameter of 12. The length of a side of the square is equal to the diameter of the circle. Find, to the nearest square unit, the area of the shaded region.



9. A population is growing at the rate of 6% a year. If there are 235 million people now, how many will there be in 4 years (in millions to the nearest million)?

10. A recipe calls for 72 mL of sugar, 36 mL of oatmeal, and 108 mL of flour. What is the lowest-terms equivalent ratio?

Answer List

- | | | |
|---------------|--------------------------|--------|
| 1. e | 2. c | 3. 1.2 |
| 4. c | 5. $\frac{1}{3}$ | 6. e |
| 7. d | 8. 91 units ² | 9. 297 |
| 10. 2 : 1 : 3 | | |
-

Catalog List

- | | | |
|---------------|--------------|--------------|
| 1. CM2 HD 131 | 2. CM2 DC 3 | 3. CM2 CB 56 |
| 4. CM2 DI 44 | 5. CM2 BE 51 | 6. CM2 FD 65 |
| 7. CM2 HE 29 | 8. CM2 GD 33 | 9. CM2 AD 50 |
| 10. CM2 BE 34 | | |

1. Which of the following ratios is equivalent to cosine?

- a) $\frac{\text{opposite}}{\text{hypotenuse}}$ b) $\frac{\text{hypotenuse}}{\text{adjacent}}$ c) $\frac{\text{adjacent}}{\text{hypotenuse}}$ d) $\frac{\text{hypotenuse}}{\text{opposite}}$ e) $\frac{\text{opposite}}{\text{adjacent}}$
-

2. Find $\angle \beta$ to the nearest degree given $\tan \beta = \frac{\sqrt{5}}{3}$.

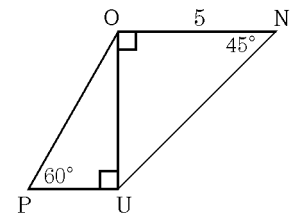
- a) 37° b) 42° c) 48° d) 59° e) 310°
-

3. In $\triangle QRS$, $m\angle R = 90^\circ$, $r = 8$, and $m\angle Q = 35^\circ$. Solve q to the nearest tenth of a unit.

- a) 4.5 b) 4.6 c) 5.6 d) 6.6 e) 35.0
-

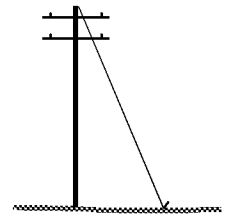
4. Find the perimeter of trapezoid OPUN.

- a) $5 + 5\sqrt{2} + \frac{5}{\sqrt{3}} + \frac{10}{\sqrt{3}}$ b) $5 + 5\sqrt{3} + \frac{5}{\sqrt{3}} + \frac{10}{\sqrt{3}}$ c) $5 + 5\sqrt{3} + \frac{5}{\sqrt{2}} + \frac{10}{\sqrt{2}}$
 d) $5 + 5\sqrt{2} + \frac{5}{\sqrt{2}} + \frac{10}{\sqrt{2}}$ e) $5 + 5\sqrt{2} + \frac{5}{\sqrt{2}} + \frac{10}{\sqrt{3}}$



5. A $6\sqrt{2}$ metre long wire is attached to the top of a telephone pole 6 metres tall. What is the exact measure of the angle the wire makes with the ground?

- a) 25° b) 30° c) 45° d) 60° e) 90°



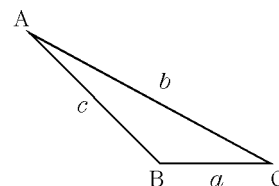
6. About how far does the tip of a 2.4 m pendulum rise as it swings 18° to one side?

7. A ski slope at Whistler is described as having a vertical drop of 1300 m during a ski run whose length is 4200 m. Find the angle of elevation of the ski slope to the nearest degree.

8. A kite 100 m from the ground is spotted by a person. The person is 8 m from the point directly below the kite. What is the angle of elevation of the kite from the person? Round your answer to the nearest tenth of a degree.

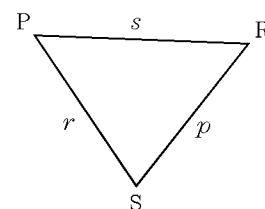
9. Heron's formula states that the area A of a triangle is given by $A = \sqrt{s(s-a)(s-b)(s-c)}$ where the semiperimeter is given by $s = \frac{1}{2}(a+b+c)$. Use Heron's formula to find the area of the triangle where $a = 12$, $b = 25$, and $c = 21$. Express your answer to the nearest square unit.

- a) 126 units² b) 127 units² c) 128 units² d) 135 units² e) 136 units²



10. Heron's formula states that the area A of a triangle ($\triangle ABC$) is given by $A = \sqrt{s(s-a)(s-b)(s-c)}$ where the semiperimeter is given by $s = \frac{1}{2}(a+b+c)$. Use Heron's formula to find the area of $\triangle PRS$ where $p = 12$, $r = 10$, and $s = 14$. Express your answer to the nearest square unit.

- a) 52 units² b) 55 units² c) 56 units² d) 58 units² e) 59 units²



11. Which of the following describe a vector quantity?

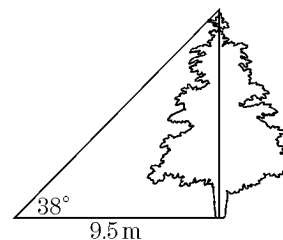
- I. the area of a square
 II. the motion of a pendulum
 III. your weight
 IV. the speed of a car

- a) I only b) II only c) III only d) IV only e) II and IV only

12. A field is in the shape of a triangle ABC. If $AB = 420$ m, $m\angle A = 35^\circ$, and $m\angle B = 103^\circ$, what is the area of the field to the nearest square metre?

13. Two forces are given by $\vec{s} = [3, -3]$ and $\vec{t} = [4, -1]$, in Newtons. What is the magnitude of $\frac{1}{3}\vec{s} - \vec{t}$?

14. Determine the height of the tree.



15. In order to measure the height of the smoke stack of Cedar Grove School, the students find that when the angle of elevation of the sun decreases from 60° to 50° , the length of the smoke stack's shadow increases by 5 m. How tall is the smoke stack? Express your answer to two decimal places.

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Math 9 Trig Functions Mr. Akroyd 1/18/99

Answer List

- | | | |
|---------------|-----------------|-------------------------|
| 1. c | 2. a | 3. b |
| 4. a | 5. c | 6. 0.12 m |
| 7. 18° | 8. 85.4° | 9. a |
| 10. e | 11. c | 12. 73667 m^2 |
| 13. 3 | 14. 7.4 m | 15. 19.14 m |
-

Catalog List

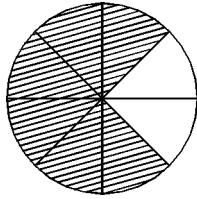
- | | | |
|---------------|--------------|---------------|
| 1. CM2 JA 30 | 2. CM2 JA 96 | 3. CM2 JB 71 |
| 4. CM2 JC 89 | 5. CM2 JC 97 | 6. CM2 JF 61 |
| 7. CM2 JF 57 | 8. CM2 JF 41 | 9. CM2 JD 50 |
| 10. CM2 JD 55 | 11. CM2 JE 5 | 12. CM2 JD 74 |
| 13. CM2 JE 40 | 14. CM2 JF 7 | 15. CM2 JF 23 |

Week of September 13–18

Monday

What reduced fraction is represented by the *shaded* portion of the given figure?

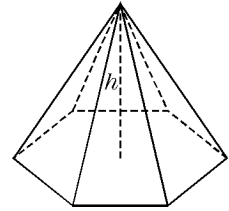
- a) $\frac{7}{8}$ b) $\frac{3}{4}$ c) $\frac{1}{2}$
 d) $\frac{1}{3}$ e) $\frac{1}{4}$



Tuesday

The volume of this pyramid is 26.67 m^3 . If the area of the base is 16 m^2 how high is the pyramid?

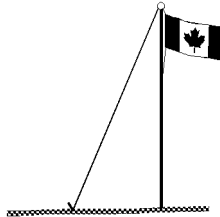
- a) 4 m b) 5 m c) 11 m
 d) 12 m e) 13 m



Wednesday

A wire is attached to the top of a 5 metre tall flagpole and forms a 60° angle with the ground. How long is the wire?

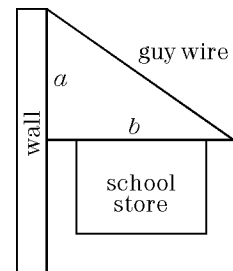
- a) $\frac{5}{\sqrt{3}}$ b) $\frac{10}{\sqrt{3}}$
 c) $5\sqrt{3}$ d) 10
 e) $10\sqrt{3}$



Thursday

A sign is attached to the wall. The horizontal signpost b is 1.5 m long. A guy wire is attached to its end and bolted to the wall at a point 1.2 m (a) above the post. Find the length of the guy wire to the nearest tenth of a metre.

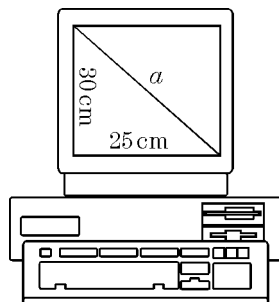
- a) 0.8 m b) 0.9 m c) 1.9 m
 d) 2.7 m e) 3.7 m



Friday

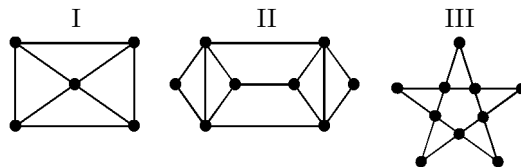
Computer monitors are priced according to the length of the diagonal of the screen. To the nearest hundredth of a centimetre, what is the length of the diagonal of the screen shown?

- a) 39.05 cm
 b) 42.42 cm
 c) 46.87 cm
 d) 55.00 cm
 e) 1525.00 cm



Saturday

Which of the following networks can be traced? Tracing a network means that you should start at a vertex and trace the figure by never lifting your pencil off the paper and never going over a segment twice. Vertices, however, may be crossed more than once.

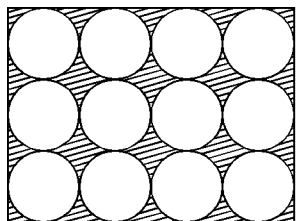


- a) I only b) II only c) III only
 d) II and III e) I and III

Week of September 20–25

Monday

There are 12 cans in a box with a rectangular base. The diameter of each can is $d = 12$ cm and the width of the box is $h = 36$ cm. What is the area of the exposed part of the base?



Tuesday

A formula for belt width is shown to be:

$$w = \frac{d}{h \times f}$$

Solve this formula for h .

a) $h = \frac{d}{f \times w}$ b) $h = \frac{f \times w}{d}$

c) $h = f \times d \times w$ d) $h = \frac{d \times w}{f}$

e) $h = \frac{f \times d}{w}$

Wednesday

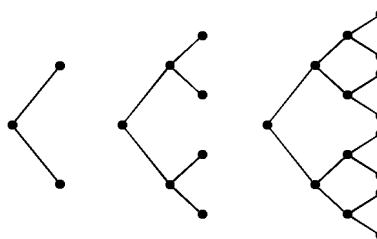
Consider the following pattern:

$$\begin{array}{rcl} 10 - 1 & = & 9 \\ 100 - 11 & = & 89 \\ 1000 - 111 & = & 889 \\ 10000 - 1111 & = & 8889 \\ & \dots & \end{array}$$

If a number on the right has n eights, then, in terms of n , how many zeroes are in the expression on the left?

Thursday

There are 2 line segments in the first figure and 6 line segments in the second figure. If this pattern is continued, how many line segments will be in the n th figure?



Friday

The formula

$$Q = \frac{k(t_2 - t_1)}{d}$$

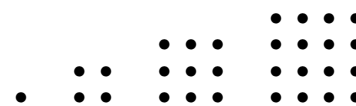
describes heat transfer from a warmer object to a cooler object where Q is the rate of transfer (in calories per second), d is the thickness of the space between the two objects, t_1 and t_2 are the respective temperatures, and k is the specific heat that depends on the type of materials. Solve this formula for k .

a) $k = \frac{dQ}{t_2 - t_1}$ b) $k = \frac{dQ}{t_2 + t_1}$ c) $k = \frac{dQ}{t_1 - t_2}$

d) $k = \frac{t_2 - t_1}{dQ}$ e) $k = \frac{t_2 + t_1}{dQ}$

Saturday

Consider the following pattern:



What is the *difference* between the number of dots in the n th figure and the number of dots in the $(n - 1)$ th figure?

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Catalog List

9-13. CM2 BB 17
9-16. CM2 IA 81
9-20. CM2 HB 13
9-23. CM2 DA 51

9-14. CM2 GC 48
9-17. CM2 IA 67
9-21. CM2 DD 29
9-24. CM2 DD 45

9-15. CM2 JC 99
9-18. CM2 HF 51
9-22. CM2 DA 43
9-25. CM2 DA 67