

Math Problems – Answers

ALGEBRA

Grade 6-7

- 1a. 3 eggs survived, 9 eggs were eaten. 1 of the survivors was a male the other 2 were females.
 2a. 9 trips, 4 with five small trees each load and 5 with one large and two small trees each load
 b. 108m
 3a. Nest #1: 3, Nest #2: 6, Nest #3: 12
 4a. Snake 1 3cm, Snake 2 9cm, Snake 3 13.5cm

SEQUENCING

Grade 6

- 1a. 3.3g, 2.8g, 2.67g, 2.5g, 2.17g, 2.14g, 2,116g, 2,1g
 2a. 296g, 296.4g, 296.43g, 299.99g, 300g, 300.01g
 3a. 9.01g, 9.001g, 9.0g, 8.89g, 8.8g, 8.999g, 8.99g, 8.9g
 4a. 2.99g, 2.0g, 1.78g, 1.67g, 1.56g, 1.5g, 1.1g, 1.0g
 5a. 90.1cm, 90.001cm, 90cm, 89.99cm, 85.999cm

AREA AND VOLUME

Grade 6-7

- 1a. 1130.40cm³
 b. 602.88cm²
 c. 0.5m
 d. \$6.00
 2a. \$11.28, \$169.16
 b. \$19.46
 c. \$175.00
 d. 20cm
 e. 0.008m³ or 8000cm³
 3a. 25m²
 b. 75m³
 c. 3.13m
 d. 9.79m²
 e. 29.39m³

FRACTIONS

Grades 6-7

- 1a. 22
 b. 234
 c. 33
 d. 96
 2a. Gartersnake 0.3m/s, Five-lined Skink 0.15m/s, Watersnake 0.2m/s, Painted Turtle 0.02m/s
 b. 1.08km/hr, 0.54km/hr, 0.72km/hr, 0.072km.hr
 c. Gartersnake, Watersnake, Five-lined Skink, Painted Turtle
 3a. There were 3 survivors, 9 were eaten
 b. 1 was a male, 2 were females

ALGEBRA

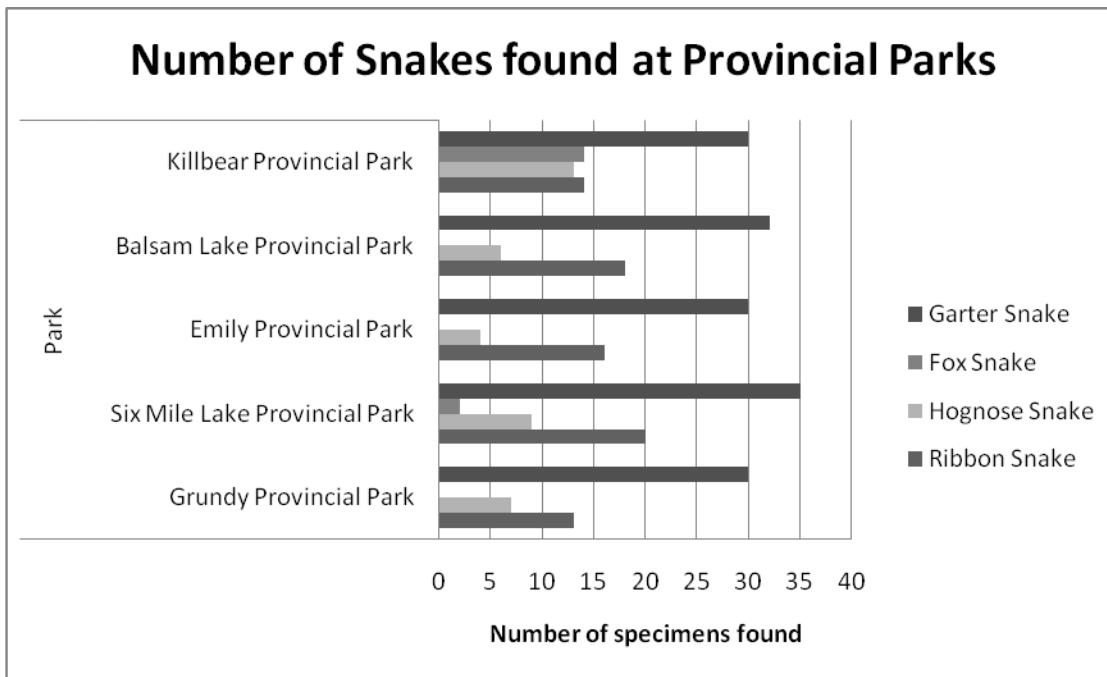
Grade 7-8

- 1a. 0.83m = 83cm
- 2a. 0.1m = 10cm
- 3a. 16, #of sides = (#of cages * 3) + 1
 - b. 25
 - c. \$4.29
 - d. \$107.16
- 4a. Lurvy gets 7 toads, Charlotte gets 5

GRAPHING

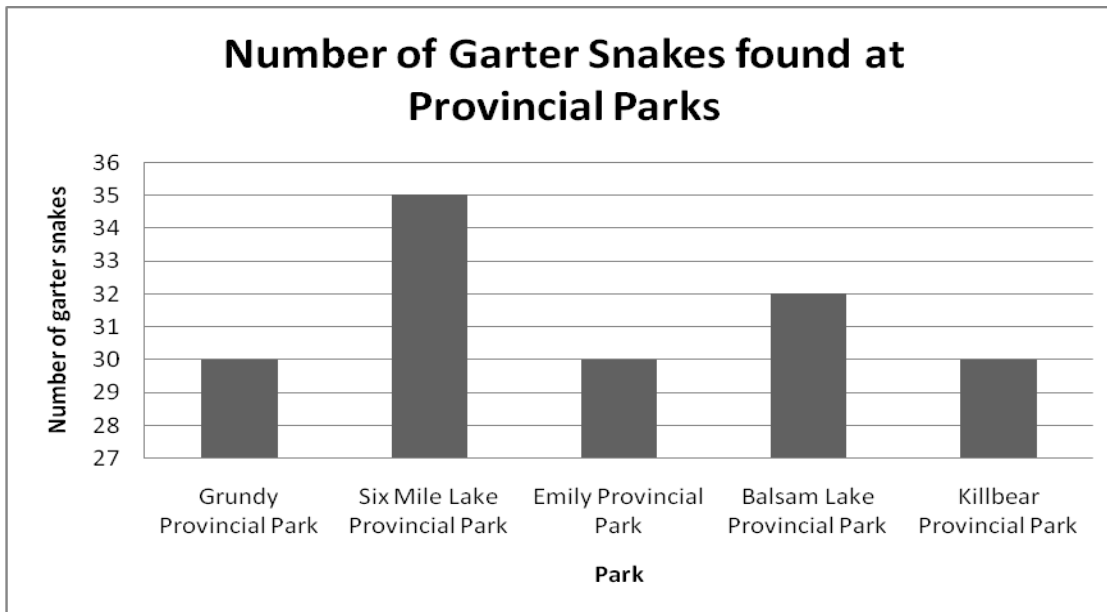
Grades 7-8

1a.



b. Bar graph, to show multiple types of snakes.

c.



MEAN, MEDIAN AND MODE

Grade 7-8

- 1a. Mean 3.69, Median 4, Mode 3
- b. Mean, Median and Mode all = 4
- 2a. Mean 72.71, Median 70, Mode 70
- b. Mean 71.8, Median 70, Mode 70
- 3a. Mean 6.67, Median 6, Mode 6
- b. Mean 5.67, Median 5, Mode 5

RATIO AND PERCENT

Grade 8

- 1a. 9
- 2a. 5:4
- b. No
- 3a. 18.75% eat only frogs, 25% eat frogs and fish, 15% eat only fish, 41.25% eat a mixed diet

ALGEBRA

Grade 6-7

1. A Blanding's Turtle with its bright yellow chin laid 12 eggs in a nest it had dug after being helped across the road by a student. Of these 12 eggs, one quarter survived to become adults, three quarters were eaten by predators as small baby turtles; of the survivors one third were males, two thirds were females.

a. Turn the fractions into whole numbers.

2. Geoff wants to plant some trees to help provide habitat for the longest snake in Canada, the Black Rat Snake. He can carry 5 small OR 1 large and 2 small trees at a time. Geoff parks his truck 6 metres from where he can plant the trees.

a. If Geoff has 35 trees in total, 30 small trees and 5 large trees, and he always carries a full load, what is the smallest number of trips he can take to move all the trees?

b. How many metres did Geoff walk to make all those trips?

3. Megan was researching spotted turtles and found three nests. The second nest had twice as many eggs as the first one, and half as many as the third nest. The second nest had 6 eggs.

a. How many eggs were in each nest?

4. While Megan was out researching the spotted turtles she found four garter snakes. The first garter snake was young and only 3cm long. The second garter snake she found was three times the size of the first one and the third garter snake was one and a half times larger than the second garter snake.

a. List the size of the snakes from smallest to largest.

SEQUENCING

Grade 6

1. It is a common misconception that water snakes spend all their time in water. Although the water is a useful tool for these animals they do bask and give birth on land. One thing they routinely use the water for is to hunt fish. A water snake catches 8 fish in two weeks at the following weights. The fish each weighed the following: 2.1g, 2.5g, 3.3g, 2.14g, 2.17g, 2.67g, 2.8g and 2.116g.
- a. Report the fish from heaviest to lightest.

2. Hognose snakes love to eat toads, and they use their upturned nose to dig into the mud and find such nutritional treasures. In a given week a hognose snake might find 6 toads. A researcher found that one week a hognose snake ate 6 toads of the following weights: 300.01g, 299.99g, 296.43g, 296.4g, 296g and 300g
- a. Order the toads from lightest to heaviest.

3. Wood turtles love to eat worms and have developed a special technique for hunting them. These intelligent turtles will thump their feet on the ground to imitate the sound of rain and will snatch up the worms once they rise to the surface. In one thumping session a wood turtle is able to eat 8 worms weighing 1.1g, 1.0g, 2.0g, 2.99g, 1.5g, 1.56g, 1.78g and 1.67g.
- a. List the worms the wood turtle ate from heaviest to lightest.

4. Fox snakes, which are yellow and brown in colour, are one of the arboreal species of snakes found in Ontario. Over 70% of their known worldwide population lives in Ontario. Like the Black rat snake, they rely heavily on forests for their survival. A researcher was tracking these animals to learn more about them and found 5 large snakes at the following lengths: 90cm, 90.1cm, 85.999cm, 89.99cm, and 90.001cm.
- a. List the snakes from longest to shortest.

AREA AND VOLUME

Grade 6-7

1. Spiny soft shelled turtles lay their eggs on land like most turtles. Crystal, a wildlife technician, has decided to put a fence around the nests she finds to help prevent raccoons and skunks from eating the eggs.
 - a. If the average nest is a cylinder 10 cm deep with a radius of 6 cm, what is the volume of the nest?
 - b. What is the surface area of that nest (include top, bottom and sides)?
 - c. Crystal decides that she wants to place fencing around the nest. The fencing will go 4 cm deeper and 2 cm wider than the nest, what length of fencing, in metres, would she need to circle the nest?
 - d. If the fencing costs \$12.00 a metre, how much would it cost to fence the turtle nest?

2. Jenny went to the hardware store so that she could buy some fencing for the Spotted Turtle nests she wanted to protect from raccoons and skunks. She bought 15 pieces of fencing at \$9.98 for each piece.
 - a. If sales tax is 13%, how much will each piece of fence cost after tax? How much did she spend in total?
 - b. In total how much did she spend in taxes on all the pieces?
 - c. If she was given back \$5.84 in change, how much money did she hand to the clerk?
 - d. If each square piece of fencing has a perimeter of 80 cm, what is the length of each side?
 - e. If she built a cube shaped cage using 5 of the pieces of fencing (the sixth side is the ground), what is the volume of the cage?

3. Robin plans to build several turtle enclosures at a local turtle rehabilitation centre. This will allow the turtles to go outside and get sun on the nice days while they are recuperating. If she builds three enclosures back to back she will cut down on the amount of fencing she needs to buy as they will be able to share edges. \longrightarrow

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 - a. Robin would like to build three equally sized square enclosures. She has 50 metres of fencing, what is the area of each enclosure?
 - b. If the fencing is 3 metres tall, what is the volume of each enclosure?
 - c. If Robin wanted to make five square enclosures instead of three how long would each side be?
 - d. What would be the area of the new cages?
 - e. What would be the volume of the new cages?

FRACTIONS

Grades 6-7

1. While doing some research on reptiles you decide to figure out their speeds. You record a garter snake moving from one end of your tent to the other (1.5 metres) in 5 seconds. Later that summer you see a skink move from under a rock to another rock about 30 cm away in 2 seconds. On another day you see a water snake, and it swims from one side of the pond to the other (4 metres) in 20 seconds. On the last day of the summer you see a painted turtle moving on land heading back to the pond; it moves 2.3 metres in 1 minute and 45 seconds.
 - a. What is the speed of each reptile in metres per second?
 - b. What is the speed of each reptile in kilometres per hour?
 - c. Name the reptiles from the fastest to the slowest based on your observation.

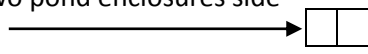
2. A Blanding's Turtle with its bright yellow chin laid 12 eggs in a nest dug after being helped across the road by a student. Of these 12 eggs, one quarter survived to become adults and three quarters were predated (eaten by other animals) as small baby turtles.
 - a. Turn the fractions into whole numbers.
 - b. If one third of the survivors were males and two thirds were females, how many males and females were there?

ALGEBRA

Grade 7-8

1. Steve was out for a hike and spotted a water snake basking beside a 2.5 metre tall wall. Steve took a picture of the snake. In the picture the wall appears to be 3cm in height and the snake appears to be 1cm long.
- a. How long is the snake in real life?

2. On the same trip Steve saw a Blanding's turtle out basking on a 5 metre long log. He knew it was a Blanding's turtle because of the bright yellow chin. He also took a picture of the Blanding's turtle. In the picture the turtle's shell was 0.1 cm tall (from the log to the top of the army helmet shaped shell) and the log was 5cm long.
- a. How tall is the Blanding's turtles shell in real life?

3. Heather is working at a turtle rehabilitation centre which helps take care of injured turtles after they have been hit on roads. She needs to make a pond system for the centre. To make a pond enclosure she needs 4 pieces of fencing – one for each wall, to make two enclosures she needs 8 pieces of fencing. If she places two pond enclosures side by side she needs only seven pieces of fencing since the enclosures can share one edge. 
- a. How many pieces of fencing will she need in order to make 5 enclosures side by side? Show the formula used.
- b. If Heather wanted to make eight enclosures, what is the minimum number of pieces of fencing she would need?
- c. If each piece of fencing costs \$3.76 plus 14% sales tax, what is the total cost of a piece of fencing?
- d. How much will Heather have to spend to make all eight enclosures?

4. Justin was taking care of two captive Hognose Snakes for Sciensational Ssnakes and he needed to feed them some toads. Justin started by dividing the toads into two piles, one pile for Lurvy and one pile for Charlotte. Justin enjoys counting things so he noticed that if he took one toad from Lurvy's pile and moved it to Charlotte's pile, the two hognose snakes would each get the same number of toads. If he instead moved one toad from Charlotte's pile to Lurvy's pile, then Lurvy would have twice as many toads as Charlotte.
- a. How many toads would each snake get if Justin does not move any toads?

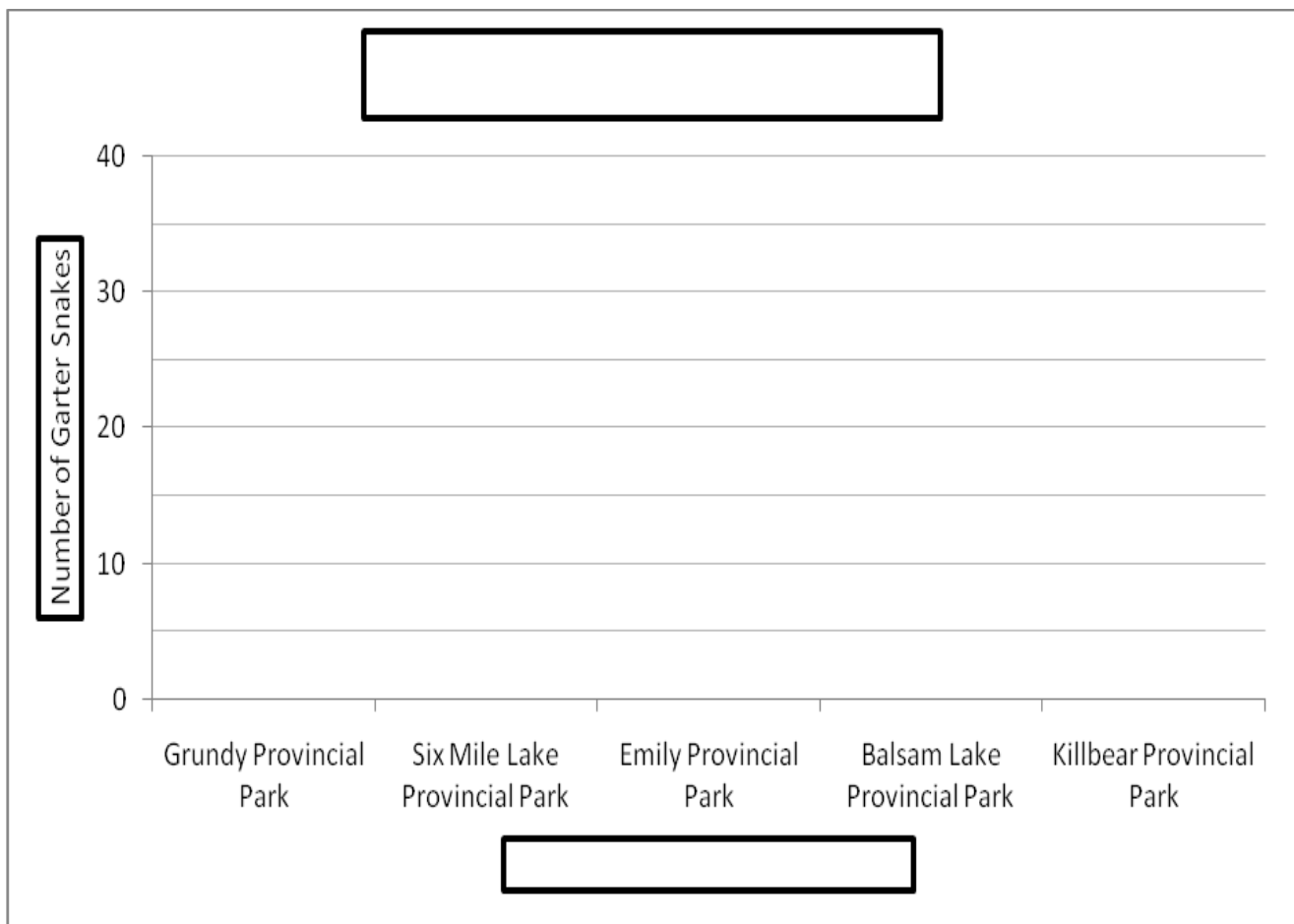
GRAPHING

Grades 7-8

1. Ontario Provincial Parks are a great place to see many of the reptile species at risk. In the table below there are several species of reptiles at risk and the total number found by Ontario Parks Staff in the summer of 2008.

Number of specimens found at Ontario Parks in the summer of 2008					
Species	Park				
	Grundy Provincial Park	Six Mile Lake Provincial Park	Emily Provincial Park	Balsam Lake Provincial Park	Killbear Provincial Park
Ribbon Snake	13	20	16	18	14
Hognose Snake	7	9	4	6	13
Fox Snake	0	2	0	0	14
Garter Snake	30	35	30	32	30

- Use a separate piece of paper to make a chart representing the number of specimens (columns) found at each park (rows). Don't forget to label your axis and title your graph.
- What type of chart did you choose for a. and why did you choose that type?
- Complete the chart below. Don't forget to add labels and a title.



MEAN, MEDIAN AND MODE

Grade 7-8

1. Sarah studied Stinkpot turtles for the summer of 2008. These small turtles get their common name from a musk-like smell they produce when they are frightened or nervous. These turtles live in lakes in some parts of southern Ontario and are a Threatened Species. After a period of incubation within the mother turtle, 3-5 eggs will be laid in a nest. Sarah found 13 nests in her study area with the following number of eggs in each nest: 3, 3, 4, 6, 1, 2, 4, 5, 3, 3, 4, 5 and 5.
 - a. What is the mean number of eggs in each nest? What is the median and mode?
 - b. How would the mean, median and mode change if all the turtles that laid 3 eggs laid 4 eggs instead?

2. Milk snakes are often found in fields where they hunt mice, one of their preferred foods. These snakes are currently listed as a species of special concern and can be recognized by the “Y” or “V” shaped marking on the top of their heads. One scientist was out looking for milk snakes to learn more about their ecology and behaviour and found seven snakes of varying lengths listed here: 69cm, 70cm, 82cm, 73cm, 70cm, 68cm and 77cm.
 - a. What is the median length for the milk snakes the researcher found? What is the mean and mode?
 - b. How would the mean, median and mode change if the lowest and highest values were not included in the list?

3. Five-lined skinks lay their eggs in May and June and they hatch mid-late July. Researchers were tracking the nests to learn how many of the eggs would hatch and recorded the following numbers of hatchlings per nest: 2, 4, 6, 7, 3, 5, 6, 9, 10, 11, 10, 9, 5, 6 and 7.
 - a. What was the mean number of hatchlings? What was the median and mode?
 - b. How would the mean, median and mode change if there were one less hatchling in each clutch?

RATIO AND PERCENT

Grade 8

1. Milk snakes are found in Ontario and are nocturnal. Farmers used to think that the snakes milked the cows, but in reality they were around the farms for another reason – the mice!
 - a. If one milksnake eats 15 % of the mice on the farm and three milksnakes can eat 45 percent of the mice on the farm, how many mice will two milksnakes eat if there are 30 mice on the farm?

2. Sean was walking through an ideal forest habitat looking for arboreal snakes. He saw 5 Black Ratsnakes and 4 Eastern Foxsnakes.
 - a. What is the ratio of Black Ratsnakes to Fox snakes?
 - b. If Sean saw twice as many Black Ratsnakes and twice as many Eastern Foxsnakes, would the ratio change?

3. Ribbon snakes can be differentiated from garter snakes by a white half moon shape in front of their eye. You track 80 ribbon snakes and find that 15 eat only frogs, 20 eat frogs and fish, 12 eat only fish and the rest each a mixed diet of fish, frogs and other animals they are able to catch.
 - a. What percentage of snakes eats each diet?