

# SOL HW 2.1

October 22, 2016 4:36 PM

1a) 100	b) 12.5	c) 18	d) 255	e) 324.75	
f) 16.25	g) 50.05	h) 31.5	j) 1116.5	j) 48.3	
k) 5175	l) 1225	m) 14875	n) 1280	o) 1014	
2a) 200	b) 330	c) 15	d) 3	e) 35	f) 4740
g) 3.6	h) 52	j) 10.16	j) 0.67	k) 450	l) 396
3a) 19	b) 40%	c) 400000	d) 5%	e) 10	f) 260.87
g) 360	h) 12.5%	j) 1.95	j) 60	k) 32/3	l) 12.5
4) The final sale price is \$60.75					
5) The area increases by 24%					
6) The team will not make the play offs					
7) The water content of a ¼ pound Big Mac Burger is 0.8 ounces					
8) The reduced price of the can of wax is about \$0.80					
9) The value of p is 80					
10) Harry earns about \$9.72 per hour					
11) The area increased by 21%					
12) George paid \$12000 for his car					
13) The new price is 24/25 compared to the original price					
14) All 60 friends need to visit to take away at least 99% of a person's illness					
15) 8/13 litres should be added to the bottle to make a solution with 7% acetic acid					
16) Alicia weighed 147 pounds after her diet					
17) The price of Box C is 80 cents					
18) Alicia uses 10.7 litres of gasoline to travel 100km on average					
19) 380 people voted					

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Math 8 Enriched: Section 2.1 Percentages

1. Evaluate each of the following without a calculator:

<p>a) 50% of 200</p> $\frac{1}{2} \times 200 = 100$	<p>b) 5% of (250)</p> $\frac{5}{100} \times 250 = 12.5$	<p>c) 15% of (120)</p> $15\% = 10\% + 5\%$ $10\% \times 120 = 12$ $5\% \times 120 = 6$ $12 + 6 = 18$
<p>d) 25% of (1020)</p> $\frac{1}{4} \times 1020 = \frac{1}{2} \times \left(\frac{1}{2} \times 1020\right) = \frac{1}{2} \times 510 = 255$	<p>e) 75% of (433)</p> $\frac{3}{4} \times 433 = 3 \times 108.25 = 324.75$	<p>f) 2.5% of (650)</p> $10\% \text{ of } 650 = 65$ $5\% \text{ of } 650 = 32.5$ $2.5\% \text{ of } 650 = 16.25$
<p>g) 11% of (455)</p> $10\% \text{ of } 455 = 45.5$ $1\% \text{ of } 455 = 4.55$ $11\% \text{ of } 455 = 50.05$	<p>h) 35% of (90)</p> $10\% \text{ of } 90 = 9$ $30\% \text{ of } 90 = 27$ $5\% \text{ of } 90 = 4.5$ $35\% \text{ of } 90 = 31.5$	<p>i) 55% of (2030)</p> $50\% \text{ of } 2030 = 1015$ $5\% \text{ of } 2030 = 101.5$ $55\% \text{ of } 2030 = 1116.5$
<p>j) 21% of (230)</p> $10\% \text{ of } 230 = 23$ $1\% \text{ of } 230 = 2.3$ $20\% \text{ of } 230 = 46$ $21\% \text{ of } 230 = 48.3$	<p>k) 115% of (4500)</p> $100\% \text{ of } 4500 = 4500$ $10\% \text{ of } 4500 = 450$ $5\% \text{ of } 4500 = 225$ $115\% \text{ of } 4500 = 5175$	<p>l) 125% of (980)</p> $\frac{5}{4} \times 980 = 5 \times 245 = 1225$
<p>m) 175% of (8500)</p>	<p>n) 160% of (800)</p>	<p>o) 130% of (780)</p>

2. Simplify the following:

a)  $20\%(100 + 200 + 300 + 400)$

b)  $66\frac{2}{3}\%$  of 495

c)  $20\%(5 + 10 + 15 + 20 + 25)$

d) 12.5% of 24

e) 25% of 50% of 280

f) 12.5% of 37920

g) 10% of 20% of 40% of 450

h)  $8\frac{2}{3}\%$  of 600

i) 50% of 40% of (2% of 2540)

j) 16.75% of 4

k) 120% of 150% of 250

l) 300% of 60% of 220

3. Solve the following:

a) 57 is 300% of what number?

b) What percent of 500 is 200?

c) 6000 is 1.5% of what number?

d) 12 is what percent of 240?

e) 12 is 120% of what number?

f) 300 is 115% of what number?

g) What number is 120% of 300

h) What percent of 20 is 2.5?

i) 0.75% of 264

j) 30% of 30 is equal to 15% of what number?	k) 20% of 64 is equal to 120% of what number?	l) 0.05% of 2500 is equal to 10% of what number?
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4. A ski shop offered a 25% discount on a pair of shoes that originally sold for \$90.00. The new price was then reduced by 10%. What is the final sale price?
5. A man has a rectangular patio in his garden. He decides to enlarge it by increasing both length and width by 10%. What is the percentage increase in area?
6. A team's record is 20 wins and 25 losses. To qualify for the playoffs a team must win 60% of its games played. What is the number of games the team must win for the 15 remaining games to make the playoffs?

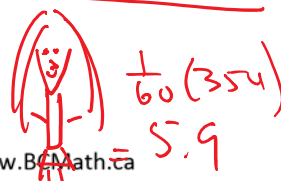
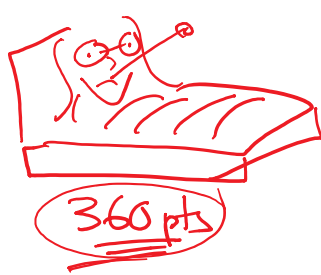
7. A Big McBurger is 30% beef, 30% cereal, 20% water, and 20% ingredients untouched by human hands. If one pound equals 16 ounces, determine the water content, in ounces, of a  $\frac{1}{4}$  pound Big McBurger.
8. The cost of a can of wax, including 5% sales tax, is \$1.20. If the price of a can of wax, without sales tax, is reduced to 70% of its original cost, what is the new price before the tax is added?
9. Sam's age is 125% of Mary's age. Mary's age is  $p\%$  of Sam's age. What is the value of " $p$ "?
10. Harry earns a salary of \$350 per week for a 44 hour week. His weekly salary is increased by 10% and his hours are reduced by 10%. Calculate his new hourly salary.

11. A rectangular picture has its length increased and width increased by 10%. What is the overall increase in the area of the picture?

12. Troy paid \$11,700 for a new car. This is 2.5% less than what George paid for an identical car. How much, in dollars, did George pay for his car?

13. The price of a walkman is reduced by 20% and then marked up by 20%. What fraction represents the new price compared to the original price?

14. According to an ancient belief, when a friend visits a sick person,  $\frac{1}{60}$  of his or her illness is taken away. How many friends need to visit to take away at least 99% of a person's illness?



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$$x \left( \frac{59}{60} \right)^k = x \left( \underline{\underline{0.01}} \right)$$

$$\left( \frac{59}{60} \right)^{200} = 0.03$$

$$\left( \frac{59}{60} \right)^{275} = 0.009$$

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15. A large bottle contains 4 litres of a solution which is 5% acetic acid (and the rest water). How much of a solution which is 20% acetic acid should we add to the bottle to obtain a solution which is 7% acetic acid? Give your answer as a common fraction in litres

16. Alicia weighed 168 pounds when she went on a diet, and her body was 30% fat by weight. On her diet, she lost fat only. After a year of dieting, her body was 20% fat by weight. How many pounds did she weigh then?

$$30\% \ 168 \rightarrow \text{FAT} = 50.4 \text{ lbs}$$

$$70\% \ 168 \rightarrow \text{NON FAT} = 117.6 \text{ lbs}$$

AFTER DIET:

FAT AMOUNT IS  $x$ .

NON FAT WEIGHT IS  $117.6 \text{ lbs}$

Total weight is  $117.6 + x$

FAT % AFTER DIET WAS 20%

$$\therefore \frac{x}{117.6 + x} = 0.2$$

$$x = 0.2(117.6 + x)$$

$$x = 0.2(117.6) + 0.2x$$

$$0.8x = 0.2(117.6)$$

$$x = 29.4 \text{ lbs.}$$

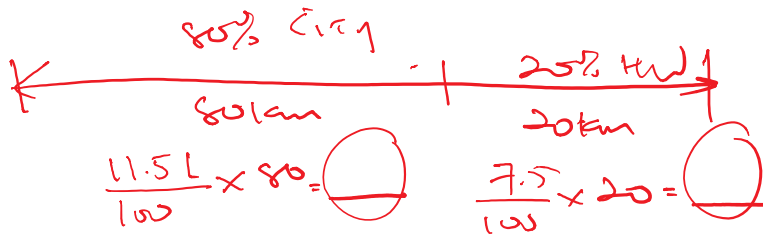
$$\text{Total weight} = 117.6 + 29.4$$

$$= 147.1 \text{ lbs}$$

17. The price of Box A is \$2.60. The price of Box B is 25% of the price of Box A. The price of C is 16/13 times the price of Box B. What is the price of Box C? Express your answer in cents.

18. Alicia's Toyota Camry uses 11.5 litres of gasoline to travel 100km in the city, and 7.5 litres to travel 100km on the highway. Eighty percent of the distance Alicia travels per year is in the city, and 20% is on the highway.

18. Alicia's Toyota Camry uses 11.5 litres of gasoline to travel 100km in the city, and 7.5 litres to travel 100km on the highway. Eighty percent of the distance Alicia travels per year is in the city, and 20% is on the highway. What is the average number of litres Alicia uses to travel 100km? Give your answer correct to 1 decimal place



19. Amy, Betty, and Graham ran for Student Council president. Amy won with 45% of the votes, Betty got 40%, and Graham got 15%. If 20 people had switched their vote from Graham to Betty, then Betty would have ended up with 1 more vote than Amy. How many people voted?

20. Alfie spends one third of his allowance on books and two thirds on healthy snacks. Suppose the price of books goes down by 8% and the price of snacks goes up by 10%. What percent increase in allowance should Alfie get so that he can keep on buying as many books and as many snacks as before prices changed?

21. Two classes took a provincial math exam. One class has 60 students, their average grade was 80%. The other class has 40 students, their average grade was 90%. What was the average grade of the 100 students?

22. Last year a skateboard cost \$100 and a helmet cost \$40. This year the cost of the skateboard increased by 12% and the cost of the helmet increased by 5%. What is the increase in the combined cost of the skateboard and the helmet?

- (a) 17%                      (b) 10%                      (c) 9.5%                      (d) 8.5%                      (e) 7.5%

23. Mark sold two computers each for \$198. The first was sold for a profit of 10%, the other for a loss of 10%. What is Mark's overall change in amount?

- (a) a loss of \$8                      (b) a loss of \$4                      (c) no profit or loss  
(d) a gain of \$4                      (e) a gain of \$8

24. A rectangle has dimensions 20cm by 50cm. If the length is increased by 20% and the width is decreased by 20%, then what is the change in the area?

- (A) an 8% increase                      (B) a 4% increase                      (C) a 0% increase                      (D) a 4% decrease                      (E) an 8% decrease

25. Alan has thrown 24 passes and completed 25% of them. Over the rest of the season Alan completes all of his passes and he ends the season with an 80% pass completion record. What is the total number of passes Alan



25. Alan has thrown 24 passes and completed 25% of them. Over the rest of the season Alan completes all of his passes and he ends the season with an 80% pass completion record. What is the total number of passes Alan threw over the season?

(A) 42

(B) 50

(C) 72

(D) 80

(E) 90

$$\begin{array}{l} \textcircled{6+x} \xrightarrow{8} \textcircled{10} \\ \textcircled{24+x} \end{array}$$

$$10(6+x) = 8(24+x)$$

$$60 + 10x = 192 + 8x$$

$$2x = 132$$

$$\boxed{x = 66}$$

$$\begin{aligned} \text{Total} &= 24 + 66 \\ &= 90 // \end{aligned}$$