

# MATH'S MATE

## Term 4 - Sheet 1



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

Due Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Parent's Signature: \_\_\_\_\_

1. [Long  $\times$ , +]  
 $5.2 \div 8 =$
2. [Decimal +, -]  
 $19.6 + 0.1 - 0.4 =$
3. [Decimal  $\times$ , +] \*  
 $0.8 \times 0.6 =$
4. [Fraction +, -] \*  
 $\frac{1}{2} + \frac{1}{5} =$
5. [Fraction  $\times$ , +] \*  
 $\frac{3}{5} \times 2\frac{1}{4} =$
6. [Percents] \*  
Find 100%, given that 10% is \$30  \$
7. [Integer +, -]  
 $-6 - (2 - 5) =$
8. [Integer  $\times$ , +]  
 $(-4m) \cdot (-2) =$
9. [Rates / Ratios] \*  
Concrete contains cement, sand and gravel in the ratio 2:3:5. How much gravel is there in 200 kg of cement?  kg
10. [Exponents] \*  
Simplify  $\frac{4s^2}{8s^{-3}}$
11. [Square Roots / Radicals] \*  
Evaluate  $\frac{6\sqrt{45}}{3\sqrt{5}}$
12. [Order of Operations] \*  
 $(9 - 8)^{2011} \times (2 - 2)^{2012} =$
13. [Exploring Number] \*  
Find  $\frac{4}{5}$  of \$6  \$
14. [Scientific Notation]  
How many significant digits are there in 14,500?
15. [Number Patterns] \*  
Write the first four terms of the sequence  $t_n = 2n$  where  $n \geq 1$
16. [Expressions]  
Add the following polynomials:  
 $(x^2 + 2x + 3) + (x^2 + 3x - 2)$
17. [Substitution] \*  
If  $a = 5$  and  $b = 2$ , write true or false for the statement:  
 $ab = 7$
18. [Expansion] \*  
Expand  $(a + 2)^2$
19. [Factorization] \*  
Factor  $x^2 + 5x + 6$
20. [Equations] \*  
Solve for  $x$ :  
 $(x + 1)(x - 3) = 0$
21. [Graphs & Functions] \*  
Use the rule  $m = \frac{y_2 - y_1}{x_2 - x_1}$  to find the slope of the line  $\overleftrightarrow{MN}$ , where  $M(1,1)$  and  $N(3,7)$ .
22. [Exploring Geometry]  
Two of the triangles below are similar. Which is the odd one out?  

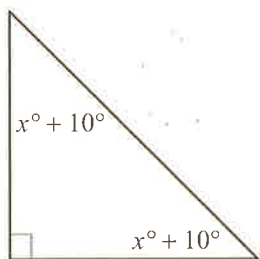
**A**

**B**

**C**

QUOTE OF THE WEEK: There's so much plastic in this culture that vinyl leopard skin is becoming an endangered synthetic. Lily Tomlin

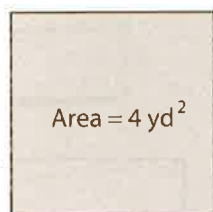
- 23.** [Angles] \*  
Find the value of  $x^\circ$ .



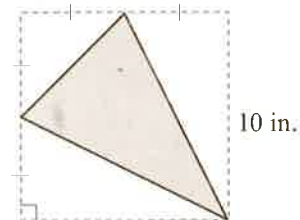
- 24.** [Units of Measurement / Time]  
Convert  $10 \text{ km}^2$  to  $\text{m}^2$ .

m<sup>2</sup>

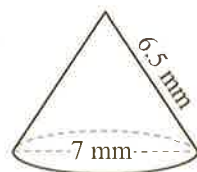
- 25.** [Perimeter] \*  
Find the perimeter, in feet, of the square.

ft

- 26.** [Area] \*  
Find the area of the shaded region.

in.<sup>2</sup>

- 27.** [Surface Area] \*  
Use  $S.A. = \pi r(r + s)$  and  $\pi \approx \frac{22}{7}$  to find the surface area of the cone.

mm<sup>2</sup>

- 28.** [Volume] \*
- A square pyramid of base 3 cm by 3 cm is made from  $18 \text{ cm}^3$  of clay. What is the height of the pyramid?
- 

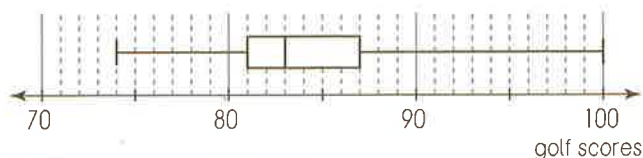
cm

- 29.** [Pythagorean Theorem / Trigonometry] \*  
Find the value of  $x$ , given  $\sin \alpha = 0.3$



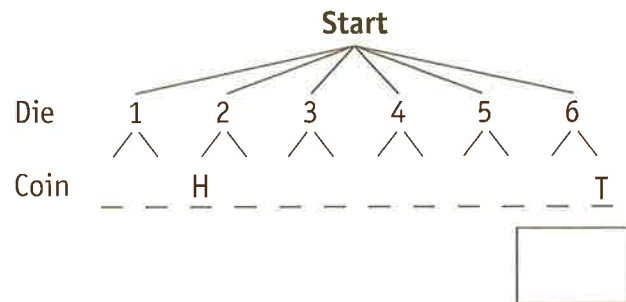
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- 30.** [Statistics]  
Find the median and the range for this box-and-whisker plot showing the golf scores Rebecca had during her 2010 matches.



median =                      range = 100

- 31.** [Probability]  
A die is rolled, and then a coin tossed. What is the probability of throwing a tail and a five?  
[Complete the tree diagram to help solve the problem.]



- 32.** [Problem Solving 1] \*  
Fill in the magic square.  
[Every row, column and diagonal has the same sum.]

1	5	9		7
	8		1	10
2		5	9	
10	4		7	
		6		4

- 33.** [Problem Solving 2] \*  
I have square paving tiles in two different colors. I want you to design for me a paved area that is made up of a rectangle in one color surrounded by a border in the other color. I want however to use exactly the same number of tiles of each color and I want the total paved area to be as large as possible. How many tiles do I need?

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Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times$ ,+]  $18.7 \times 8 =$

2. [Decimal +, -]  $0.7 + 3.5 - 0.5 =$

3. [Decimal  $\times$ ,+] \*  $0.4 \div 5 =$

4. [Fraction +, -] \*  $\frac{1}{2} - \frac{1}{3} =$

5. [Fraction  $\times$ ,+] \*  $1\frac{1}{9} \times 1\frac{1}{2} =$

6. [Percents] \* Find 100%, given that 50% is \$28  \$

7. [Integer +, -]  $7 + (3 - 9) =$

8. [Integer  $\times$ ,+]  $(+5) \cdot (-3q) =$

9. [Rates / Ratios] \* Renee built a *Lego* house using white, blue and red bricks in the ratio 2 : 8 : 5. Of the 150 bricks used, how many were blue?

10. [Exponents] \* Simplify  $\frac{3(t^2)^{-2}}{t^{-5}}$

11. [Square Roots / Radicals] \* Evaluate  $\frac{5\sqrt{80}}{\sqrt{5}}$

12. [Order of Operations] \*  $15 \times 36 \times (2 - 2) + 9 =$

13. [Exploring Number] \* Find  $\frac{2}{9}$  of \$3.60  \$

14. [Scientific Notation] How many significant digits are there in 200,000?

15. [Number Patterns] \* Write the first four terms of the sequence  $t_n = 2n + 3$  where  $n \geq 1$

16. [Expressions] Add the following polynomials:  
 $(2x^2 + 3x + 5) + (x^2 - 2x - 3)$

17. [Substitution] \* If  $a = 5$ ,  $b = 3$  and  $c = 1$ , write true or false for the statement:  
 $b + c < a$

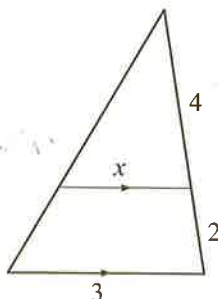
18. [Expansion] \* Expand  $(x - 2)^2$

19. [Factorization] \* Factor  $x^2 + 8x + 12$

20. [Equations] \* Solve for  $x$ :  
 $(x - 8)(x + 3) = 0$

21. [Graphs & Functions] \* Use the rule  $m = \frac{y_2 - y_1}{x_2 - x_1}$  to find the slope of the line  $\overleftrightarrow{PQ}$ , where  $P(3, 2)$  and  $Q(1, 5)$ .

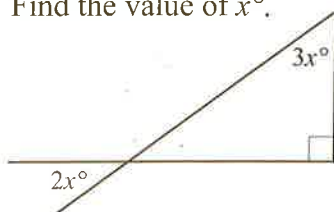
22. [Exploring Geometry] Find the value of  $x$ . [All measurements are in cm.]



QUOTE OF THE WEEK: Constant dripping hollows out a stone. Lucretius

23. [Angles] \*

Find the value of  $x^\circ$ .



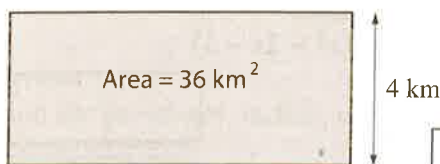

24. [Units of Measurement / Time]

How many  $\text{ft}^2$  are there in an area of  $720 \text{ in}^2$ ?

  $\text{ft}^2$ 

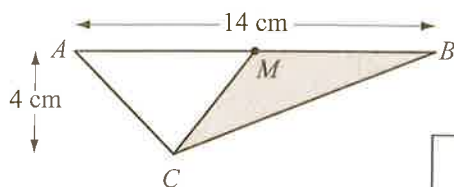
25. [Perimeter] \*

Find the perimeter of the rectangle.


 km

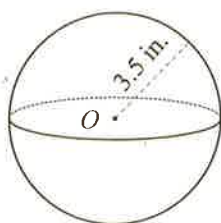
26. [Area] \*

Find the area of the shaded triangle, given that  $M$  is the midpoint of  $\overline{AB}$ .


  $\text{cm}^2$ 

27. [Surface Area] \*

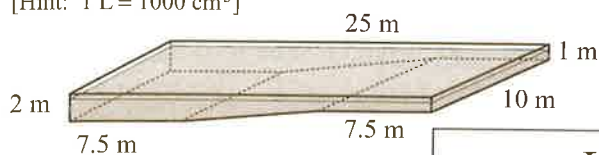
Using  $S.A. = 4\pi r^2$  and  $\pi \approx \frac{22}{7}$ , find the surface area of the sphere.


  $\text{in}^2$ 

28. [Volume] \*

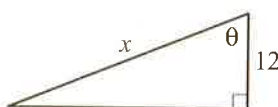
The water level in a public swimming pool has fallen 4 cm due to evaporation. Use the pool dimensions given below to work out how many liters of water must be added to the pool to restore the desired level.

[Hint:  $1 \text{ L} = 1000 \text{ cm}^3$ ]


 L

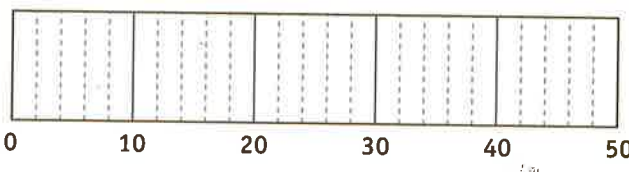
29. [Pythagorean Theorem / Trigonometry] \*

Find the value of  $x$ , given  $\cos \theta = 0.4$



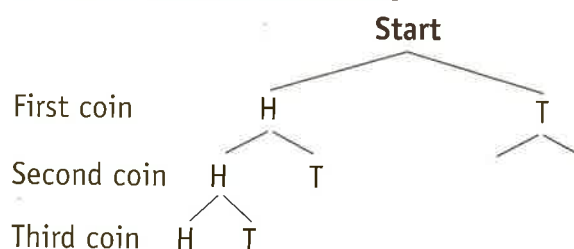

30. [Statistics]

Draw a box-and-whisker plot for the set of data whose lowest value is 6, greatest value is 44, median is 32, lower quartile is 22 and upper quartile is 38.



31. [Probability]

Three coins are tossed. What is the probability of having two heads and one tail? [Complete the tree diagram to help solve the problem.]




32. [Problem Solving 1] \*

Chuquet posed the following problem in the year 1484:

"A builder made a deal with a man to build a house in 30 days. For every day of work the builder was to be paid 5 coins but for every day of rest he would pay back 6 coins. When the house was finished the builder had gained 18 coins. Find the number of days the builder worked."

33. [Problem Solving 2] \*

A bricklayer knows from experience that no more than 6% of any load of bricks is broken on delivery. Since it is often not possible to purchase exactly matching bricks at a later date, it is important that the original order include sufficient bricks for the job. If bricks can only be ordered in lots of 100, and 8000 bricks are required to finish the job, how many bricks should the bricklayer's order?



# MATH'S MATE

## Term 4 - Sheet 3



Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times$ , +]  
 $6.03 \div 9 =$
2. [Decimal +, -]  
 $4 + 0.2 - 2.3 =$
3. [Decimal  $\times$ , +] \*  
 $0.75 \times 0.04 =$
4. [Fraction +, -] \*  
 $\frac{2}{5} - \frac{1}{3} =$
5. [Fraction  $\times$ , +] \*  
 $2 \times 2\frac{4}{5} =$
6. [Percents] \*  
Find 100%, given that 2% is \$4  \$
7. [Integer +, -]  
 $(6 - 11) - 2 =$
8. [Integer  $\times$ , +]  
 $(-7) \div (-2t) =$
9. [Rates / Ratios] \*  
The ratio of the pages Heath has read to those he hasn't read from a book of 360 pages is 5:4.  
How many pages has Heath read?
10. [Exponents] \*  
Simplify  $\frac{4s}{s^{-4}}$
11. [Square Roots / Radicals] \*  
Evaluate  $6\sqrt{24} \div 2\sqrt{6}$
12. [Order of Operations] \*  
 $(3 - 3)^9 + (1999 \times 3)^0 =$
13. [Exploring Number] \*  
Find  $\frac{7}{8}$  of 1 ton in pounds.  lb
14. [Scientific Notation]  
How many significant digits are there in 0.0407?
15. [Number Patterns] \*  
Write the first four terms of the sequence  $t_n = 5n$  where  $n \geq 1$
16. [Expressions]  
Add the following polynomials:  
 $(3x + 5y + 1) + (2x - 3y + 4)$
17. [Substitution] \*  
If  $a = 3$  and  $b = 4$ , write true or false for the statement:  
 $(a + b)^2 = a^2 + 2ab + b^2$
18. [Expansion] \*  
Expand and simplify  
 $(x - 1)(2x + 3)$
19. [Factorization] \*  
Factor  
 $x^2 - 11x + 30$
20. [Equations] \*  
Solve for  $x$ :  
 $(x + 2)(x - 5) = 0$
21. [Graphs & Functions] \*  
Use the rule  $m = \frac{y_2 - y_1}{x_2 - x_1}$  to find the slope of the line  $\overleftrightarrow{AB}$ , where  $A(-1, 1)$  and  $B(0, 2)$ .
22. [Exploring Geometry]  
Two of the triangles below are similar. Which is the odd one out?  

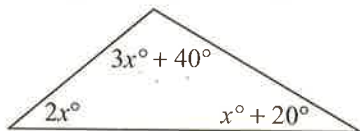
**A**

**B**

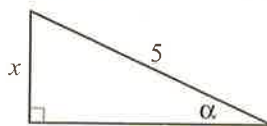
**C**

QUOTE OF THE WEEK: I get by with a little help from my friends. John Lennon

23. [Angles] \*  
Find the value of the biggest angle in the triangle below. [Triangle not drawn to scale.]




29. [Pythagorean Theorem / Trigonometry] \*  
Find the value of  $x$ , given  $\sin \alpha = 0.42$



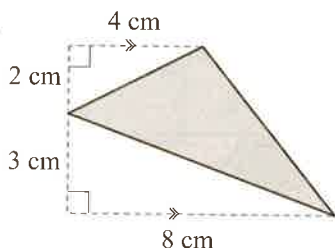

24. [Units of Measurement / Time]  
How many  $\text{cm}^3$  are there in 1 cubic meter?

  $\text{cm}^3$ 

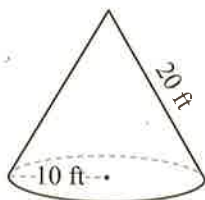
25. [Perimeter] \*  
Find the perimeter of the rhombus.


 in.

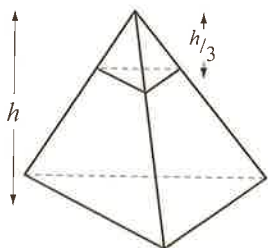
26. [Area] \*  
Find the area of the shaded triangle.


  $\text{cm}^2$ 

27. [Surface Area] \*  
Find the surface area of the cone.  
(Use  $\pi \approx 3.14$ )


  $\text{ft}^2$ 

28. [Volume] \*  
For the pyramids shown, find the ratio:  
$$\frac{\text{Volume of pyramid with height } h}{\text{Volume of pyramid with height } \frac{h}{3}}$$

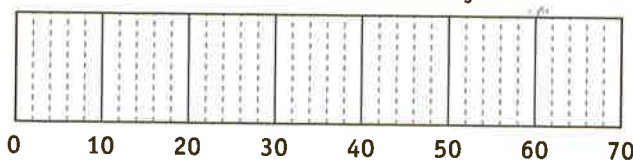



30. [Statistics]  
Draw a box-and-whisker plot showing the number of moons of each planet in our solar system:

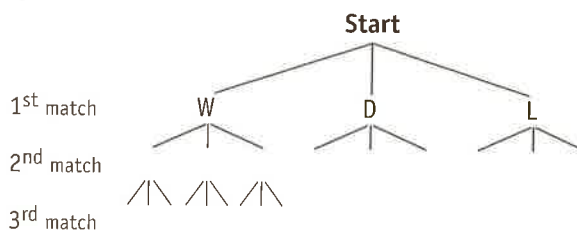
Earth	1	Saturn	47
Mars	2	Uranus	27
Jupiter	63	Neptune	13

[Venus and Mars don't have any moons.]

Number of moons in our solar system



31. [Probability]  
A soccer team plays three matches which it can either win (W), lose (L) or draw (D). What is the probability of having 2 wins and 1 draw?  
[Complete the tree diagram to help solve the problem.]




32. [Problem Solving 1] \*  
$$\frac{0.\overline{6} \times 0.125}{0.25 \times 0.1} =$$

33. [Problem Solving 2] \*  
A gambler begins with \$1024. He bets half of all he has on the toss of a coin. So pleased is he with the win that he bets, in exactly the same fashion, another 9 times.

"Happily," he says, "I won as often as I lost. So I presume I've come out even."

Just how much money will he have after the 10 bets?

[Example: If he bets \$100 he will either lose the \$100 or win \$100.]

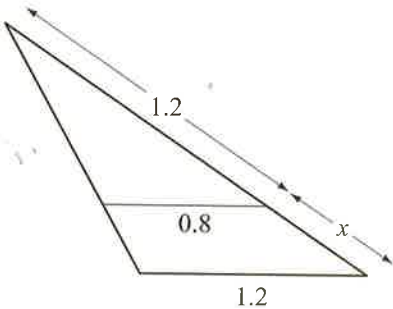
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Name: .....

Due Date: ..... / ..... / .....

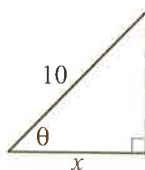
Parent's Signature: .....

1. [Long  $\times$ ,  $\div$ ]  
 $4.56 \div 5 =$
2. [Decimal  $+$ ,  $-$ ]  
 $0.25 + 0.22 - 0.27 =$
3. [Decimal  $\times$ ,  $\div$ ] \*  
 $45 \div 1.5 =$
4. [Fraction  $+$ ,  $-$ ] \*  
 $\frac{1}{3} + \frac{1}{4} =$
5. [Fraction  $\times$ ,  $\div$ ] \*  
 $\frac{5}{9} \div 2\frac{2}{5} =$
6. [Percents] \*  
Find 100%, given that 5% is \$6  \$
7. [Integer  $+$ ,  $-$ ]  
 $(6 - 3) - 9 =$
8. [Integer  $\times$ ,  $\div$ ]  
 $(+20k) \div (-4) =$
9. [Rates / Ratios] \*  
The ratio of the soda water to lemon juice in the lemonade was 9:1. How much lemon juice was there in 2 L of the lemonade?  mL
10. [Exponents] \*  
Simplify  $\frac{6p^2}{3p^{-2}}$
11. [Square Roots / Radicals] \*  
Evaluate  $9\sqrt{2} \div 6\sqrt{18}$
12. [Order of Operations] \*  
 $(4 - 4)^8 \div 2012 =$
13. [Exploring Number] \*  
Find  $1\frac{1}{2}$  of \$84  \$
14. [Scientific Notation]  
How many significant digits are there in 5050?
15. [Number Patterns] \*  
Write the first four terms of the sequence  $t_n = n^2$  where  $n \geq 1$
16. [Expressions]  
Add the following polynomials:  
 $(2x + y + 5) + (x + 2y - 3)$
17. [Substitution] \*  
If  $a = 5$ ,  $b = 3$  and  $c = 1$ , write true or false for the statement:  
 $12 - b = a + c + 4$
18. [Expansion] \*  
Expand and simplify  
 $(x + 4)^2 - 10$
19. [Factorization]  
Factor  
 $x^2 + 3x - 10$
20. [Equations] \*  
Solve for  $x$ :  
 $(x - 4)(x + 9) = 0$
21. [Graphs & Functions] \*  
Use the rule  $m = \frac{y_2 - y_1}{x_2 - x_1}$  to find the slope of the line  $\overleftrightarrow{AB}$ , where  $A(2, -2)$  and  $B(-3, 1)$ .
22. [Exploring Geometry]  
Find the value of  $x$ . [All measurements are in cm.]  


23. [Angles] \*  
Find the value of the smallest angle in the triangle below. [Triangle not drawn to scale.]

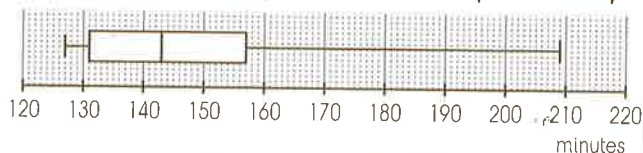



29. [Pythagorean Theorem / Trigonometry] \*  
Find the value of  $x$ , given  $\cos \theta = 0.69$



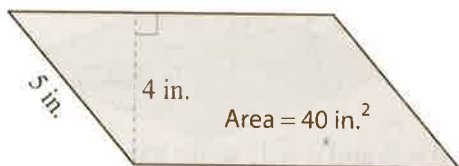

30. [Statistics]  
Find the median and range of the number of minutes representing the winning times for all the men's Olympic marathons (1896 to 2008).

Winning times - Olympic Marathons - Men (1896 - 2008)

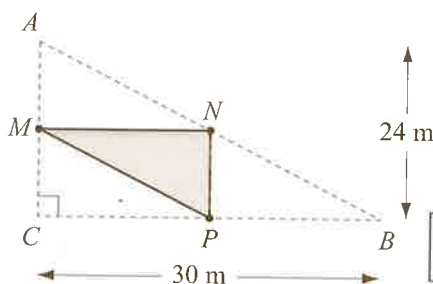


median = range =

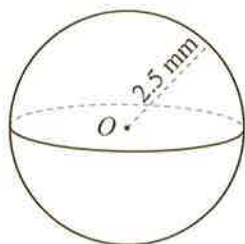
25. [Perimeter] \*  
Find the perimeter of the parallelogram.




26. [Area] \*  
Find the area of the shaded triangle, given that  $M$ ,  $N$  and  $P$  are midpoints of the sides of  $\triangle ABC$ .




27. [Surface Area] \*  
Using  $S.A. = 4\pi r^2$  and  $\pi \approx 3.14$ , find the surface area of the sphere.




32. [Problem Solving 1] \*  
Find positive integers  $a$ ,  $b$ ,  $c$  and  $d$  if:  
 $a + a = b$ ,  
 $b + b = c$ ,  
 $c + c = d$  and  
 $a + b + c + d = 360$

$a =$   $b =$   $c =$   $d =$

28. [Volume] \*  
A brick 12 cm by 8 cm by 25 cm is dropped into a deep rectangular tank which is half full of water. If the base of the tank is 15 cm wide and 40 cm long, by how much will the water level in the tank rise?

33. [Problem Solving 2] \*  
The sum of  $x$  consecutive numbers is  $12x + 4$ . Find the maximum possible value of  $x$ .



# MATH'S MATE

## Term 4 - Sheet 5



Name: .....

Due Date: ..... / ..... / .....

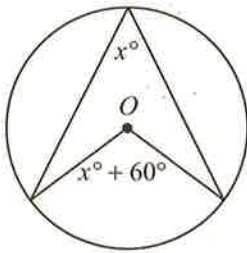
Parent's Signature: .....

1. [Long  $\times, \div$ ] \*  
 $18.9 \times 47 =$
2. [Decimal  $+, -$ ] \*  
 $10 + 4.2 - 0.01 =$
3. [Decimal  $\times, \div$ ] \*  
 $1 \div 0.008 =$
4. [Fraction  $+, -$ ] \*  
 $\frac{1}{3} + \frac{1}{4} + \frac{1}{5} =$
5. [Fraction  $\times, \div$ ] \*  
 $\frac{3}{4} \times 1\frac{4}{5} =$
6. [Percents] \*  
If the 10% tax on a pair of shoes was \$10, what was the total price of the shoes?  \$
7. [Integer  $+, -$ ] \*  
 $(4 - 5) - (3 - 6) =$
8. [Integer  $\times, \div$ ] \*  
 $(10 - 3) \times (3 - 10) =$
9. [Rates / Ratios] \*  
I reduced an image on my computer using a scale factor of 75%. What scale factor is required to return the image to its original size?
10. [Exponents] \*  
If  $2^x = 0.125$ , then  $x =$
11. [Square Roots / Radicals] \*  
Simplify  $2\sqrt{8} + 2\sqrt{2}$
12. [Order of Operations] \*  
 $(25 - 5^2) \div 2004 + 1998 =$
13. [Exploring Number] \*  
A pair of socks cost \$3.80. How many pairs can you buy with \$25.00?
14. [Scientific Notation] \*  
Evaluate  $(2.5 \times 10^4) \times (4 \times 10^{-6})$
15. [Number Patterns] \*  
Write the first four terms of the sequence  $t_n = 11 - n$  where  $n \geq 1$
16. [Expressions] \*  
Using algebraic notation, write three consecutive whole numbers starting with  $n$ .
17. [Substitution] \*  
If  $v = u + at$  find the speed  $v$ , in m/s, if  $u = 2$  m/s,  $a = 3$  m/s<sup>2</sup> and  $t = 5$  s.  m/s
18. [Expansion] \*  
Expand  $(b - 3)^2$
19. [Factorization] \*  
Factor and simplify  $\frac{x^2 - x - 12}{x + 3}$
20. [Equations] \*  
Solve for  $x$ :  $\frac{x}{2} + \frac{x}{3} = 5$
21. [Graphs & Functions] \*  
Complete the table:  

equation	slope	x-intercept	y-intercept
$y = x + 6$			
$y = 2x + 6$			
22. [Exploring Geometry] \*  
Circle the net that **cannot** be folded to form a model of a polyhedron.

QUOTE OF THE WEEK: There's one advantage to the music the younger generation is crazy about, nobody can whistle it.

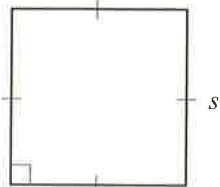
23. [Angles] \*  
Find the value of  $x^\circ$ .



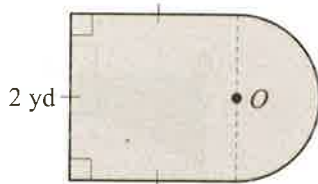

24. [Units of Measurement / Time]  
How many liters are there in  $v$  milliliters?

 L

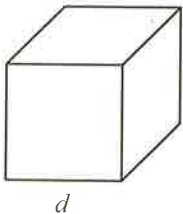
25. [Perimeter] \*  
Write a formula for the perimeter  $P$  of the square.


  $P =$ 

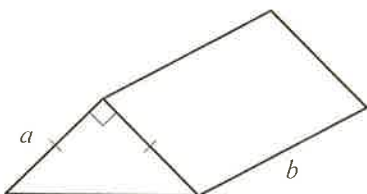
26. [Area] \*  
Find the area of the shape. (Use  $\pi \approx 3.14$ )


  $\text{yd}^2$ 

27. [Surface Area] \*  
Write a formula for the surface area of the cube.

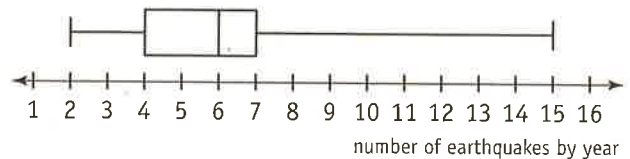

  $S.A. =$ 

28. [Volume] \*  
Write a formula for the volume  $V$  of the triangular prism.

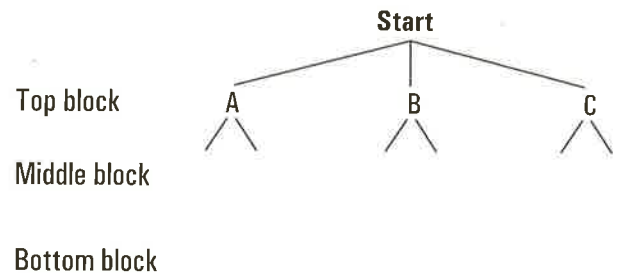

  $V =$ 

29. [Pythagorean Theorem / Trigonometry] \*  
A triangle has sides of lengths 5 m, 23 m and 24 m. Is it a right triangle?

30. [Statistics] \*  
Find the median and interquartile range for this box-and-whisker plot showing the number of U.S. earthquakes by year (magnitude 6.0 - 6.9 on a Richter scale), between 1970 and 2010.


 median =  IQR =

31. [Probability]  
In how many different ways can three blocks, A, B and C, be stacked in a pile?  
[Complete the tree diagram to help solve the problem.]




32. [Problem Solving 1] \*  
Pierre de Fermat, a 17<sup>th</sup> century French lawyer, stated that any whole number can be written as the sum of four, or fewer, square numbers. For example:  $15 = 3^2 + 2^2 + 1^2 + 1^2$ . Write 56 as the sum of four, or fewer, square numbers.

33. [Problem Solving 2] \*  
At the end of a set of tennis, Gabby had won exactly 50% of the points played but lost the set! What is the least number of games that Gabby must have won in the set?

# MATH'S MATE

## Term 4 - Sheet 6



Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times$ , +] \*  
 $15.6 \times 35 =$

2. [Decimal +, -]  
 $3.142 - 0.14 - 0.002 =$

3. [Decimal  $\times$ , +] \*  
 $25 \times 0.04 =$

4. [Fraction +, -] \*  
 $\frac{2}{3} - \frac{2}{5} + \frac{1}{15} =$

5. [Fraction  $\times$ , +] \*  
 $3\frac{1}{2} \div \frac{7}{3} =$

6. [Percents] \*  
If the 10% tax on the price of a telescope was \$30, what was the total price of the telescope?  \$

7. [Integer +, -] \*  
 $(6 + 3) + (2 - 4) =$

8. [Integer  $\times$ , +] \*  
 $(4 - 6) \times (3 - 8) =$

9. [Rates / Ratios] \*  
I reduced a scanned image on my computer using a scale factor of 25%. What scale factor is required to return the image to its original size?

10. [Exponents] \*  
If  $3^x = \frac{1}{27}$ , find the value of  $x$ .

11. [Square Roots / Radicals] \*  
Simplify  $4\sqrt{7} - 3\sqrt{63}$

12. [Order of Operations] \*  
 $(6 \times 4 - 23)^9 - 2^3 =$

13. [Exploring Number] \*  
Can you drive 475 km at an average speed of 80 km/h in under 6 hours?

14. [Scientific Notation] \*  
Evaluate  $(2 \times 10^{-1}) \times (5 \times 10^2)$

15. [Number Patterns] \*  
Write the first four terms of the sequence  $t_n = 5(n - 1)$  where  $n \geq 1$

16. [Expressions]  
Using algebraic notation, write two consecutive whole numbers starting with  $2n$ .

17. [Substitution] \*  
If  $x = vt$  find the distance  $x$ , in km, when  $v = 25$  km/h and  $t = 120$  min.  km

18. [Expansion] \*  
Expand and simplify  $(t + 3)^2 - 4t$

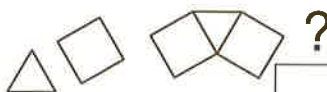
19. [Factorization] \*  
Factor and simplify  $\frac{x^2 + 4x + 3}{x + 1}$

20. [Equations] \*  
Solve for  $x$ :  
 $\frac{x}{2} + \frac{x}{4} = 3$

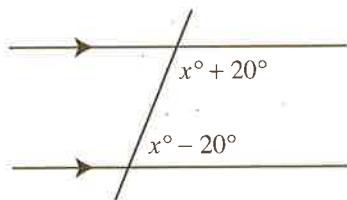
21. [Graphs & Functions] \*  
Complete the table:

equation	slope	x-intercept	y-intercept
$y = -x + 1$			
$y = x - 1$			

22. [Exploring Geometry]  
I have three squares and two triangles all of which have side lengths of 4 cm. I attempt to form a net for a polyhedron by taping the shapes together along their edges. If this can be done, into what shape will the net fold?



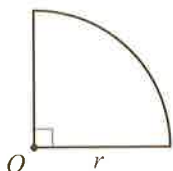
23. [Angles] \*  
Find the value of  $x^\circ$ .



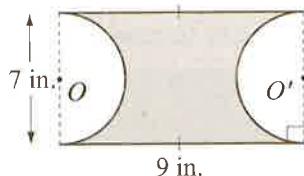

24. [Units of Measurement / Time]  
How many grams are there in  $w$  kilograms?

 g

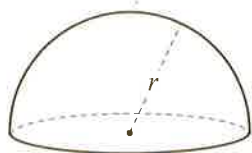
25. [Perimeter] \*  
Write a formula for the perimeter  $P$  of the shape. [Leave your answer as a multiple of  $\pi$ .]


  $P =$ 

26. [Area] \*  
Find the area of the shaded region. (Use  $\pi \approx \frac{22}{7}$ )


 in.<sup>2</sup>

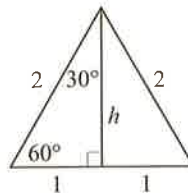
27. [Surface Area] \*  
The surface area of a sphere is  $4\pi r^2$ . Write a formula for the surface area of the solid hemisphere. [Leave your answer as a multiple of  $\pi$ .]


  $S.A. =$ 

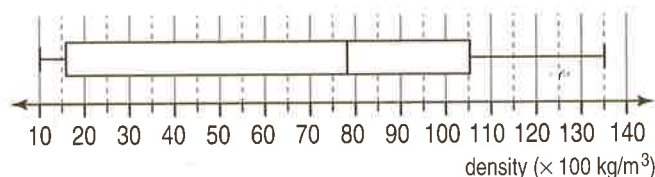
28. [Volume] \*  
Write a formula for the volume  $V$  of the rectangular prism.


  $V =$ 

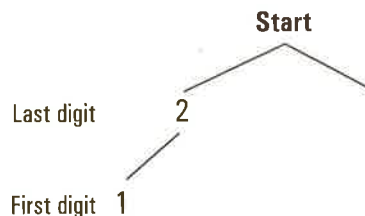
29. [Pythagorean Theorem / Trigonometry] \*  
Find the height of the equilateral triangle below. [Give your answer as a radical.]




30. [Statistics] \*  
Find the range and the upper quartile for this box-and-whisker plot showing the density of selected common substances.


 range =  UQ =

31. [Probability]  
How many different two-digit, even numbers can be made using the digits 1, 2, 3 and 4 if the digits can not be repeated?  
[Complete the tree diagram below to help solve the problem.]




32. [Problem Solving 1] \*  
If each letter represents a different digit, none of which is zero, what number does DANGER represent? [Clue: SOS = 323]

$$\begin{array}{r} \text{CROSS} \\ + \text{ROADS} \\ \hline \text{DANGER} \end{array}$$

33. [Problem Solving 2] \*  
What are the last two digits in the expansion of  $6^{2004}$ ?



# MATH'S MATE

## Term 4 - Sheet 7



Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times$ ,  $\div$ ] \*  
 $612 \div 18 =$

2. [Decimal  $+$ ,  $-$ ] \*  
 $1.1 + 0.49 + 0.01 =$

3. [Decimal  $\times$ ,  $\div$ ] \*  
 $2.25 \div 0.9 =$

4. [Fraction  $+$ ,  $-$ ] \*  
 $\frac{2}{3} + \frac{3}{4} - \frac{5}{12} =$

5. [Fraction  $\times$ ,  $\div$ ] \*  
 $1\frac{1}{9} \times 1\frac{3}{6} =$

6. [Percents] \*  
If the 10% tax on admission to the game was \$2, what was the total price of admission?

7. [Integer  $+$ ,  $-$ ] \*  
 $(7 - 11) - (1 - 8) =$

8. [Integer  $\times$ ,  $\div$ ] \*  
 $\frac{6 - 9}{9 - 6} =$

9. [Rates / Ratios] \*  
Joshua averaged 164 heart beats per minute for the first 10 minutes of his half an hour fitness session, and 122 beats per minute for the rest of the session. What was his average heart rate for the whole session?

10. [Exponents] \*  
If  $3 \times 2^y = 12$ , then  $y =$

11. [Square Roots / Radicals] \*  
Simplify  $3\sqrt{8} + 2\sqrt{18}$

12. [Order of Operations] \*  
 $(1001 - 10^3) \times 2004 =$

13. [Exploring Number] \*  
Can you drive 300 mi at an average speed of 55 mph in under 6 hours?

14. [Scientific Notation] \*  
Evaluate  $(1.6 \times 10^2) \times (3 \times 10^5)$

15. [Number Patterns] \*  
Write the first four terms of the sequence  $t_n = 2(n + 1)$  where  $n \geq 1$

16. [Expressions] \*  
Using algebraic notation, write three consecutive even numbers starting with  $n - 2$ .

17. [Substitution] \*  
Given  $a = \frac{v}{t}$  find the acceleration  $a$ , in  $\text{m/s}^2$ , when  $v = 300 \text{ m/s}$  and  $t = 60 \text{ s}$ .

18. [Expansion] \*  
Expand and simplify  $(2m + 3)(m - 1)$

19. [Factorization] \*  
Factor and simplify  $\frac{x^2 + 11x + 10}{x + 1}$

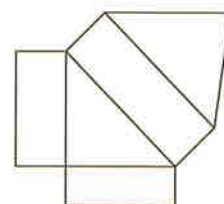
20. [Equations] \*  
Solve for  $x$ :  $\frac{x}{3} + \frac{x}{4} = 7$

21. [Graphs & Functions] \*  
Complete the table:

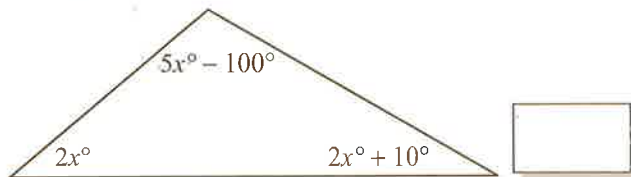
equation	slope	x-intercept	y-intercept
$y = x$			
$y = x - 1$			

22. [Exploring Geometry] \*  
Which shape can this net be used to make?

- A) cube
- B) square pyramid
- C) triangular prism
- D) rectangular prism
- E) tetrahedron



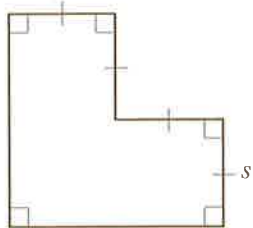
23. [Angles] \*  
Find the value of the biggest angle in the triangle below. [Triangle not drawn to scale.]



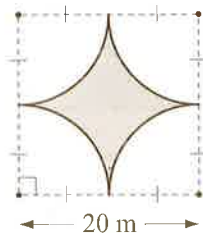
24. [Units of Measurement / Time]  
How many years are there in  $t$  decades?

years

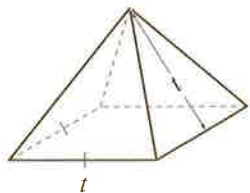
25. [Perimeter] \*  
Write a formula for the perimeter  $P$  of the shape.



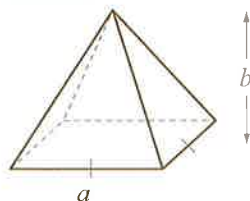
26. [Area] \*  
Find the area of the shaded region.  
(Use  $\pi \approx 3.14$ )



27. [Surface Area] \*  
Write a formula for the surface area of the square pyramid.



28. [Volume] \*  
Using  $V = \frac{1}{3} \times \text{base area} \times \text{height}$ , write a formula for the volume  $V$  of the square pyramid shown.



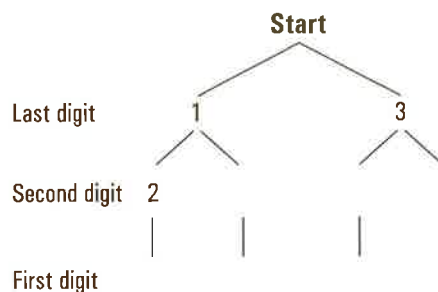
29. [Pythagorean Theorem / Trigonometry] \*  
Find the distance between the points  $A(1,5)$  and  $B(4,1)$ .

30. [Statistics] \*  
Find the mode and the interquartile range for this data showing the goals scored in all men's Soccer World Cup finals between 1930 and 2010.

Soccer World Cup finals		1930 - 2010							
goals	0	1	2	3	4	5	6	7	
frequency	1	2	2	4	3	3	3	1	

mode =  IQR =

31. [Probability]  
How many odd, three-digit numbers can be made using the digits 1, 2 and 3 once each?  
[Complete the tree diagram to help solve the problem.]



32. [Problem Solving 1] \*  
Fill in the missing digits in the multiplication.

$$\begin{array}{r}
 22\Box \\
 \times \quad 2\Box \\
 \hline
 \Box\Box\Box \\
 \Box5\Box0 \\
 \hline
 5\Box\Box2
 \end{array}$$

33. [Problem Solving 2] \*  
How many squares are there on a chess board?  
[Hint: Remember that apart from the 64 smallest squares there are other squares of a larger size  $2 \times 2$ ,  $3 \times 3$ , etc.]

# MATH'S MATE

## Term 4 - Sheet 8



Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times, \div$ ] \*  
 $31.6 \times 25 =$

2. [Decimal  $+, -$ ]  
 $32 - 0.5 + 1.64 =$

3. [Decimal  $\times, \div$ ] \*  
 $0.04 \div 8 =$

4. [Fraction  $+, -$ ] \*  
 $\frac{1}{2} + \frac{2}{3} - \frac{4}{5} =$

5. [Fraction  $\times, \div$ ] \*  
 $3\frac{1}{7} \div \frac{11}{7} =$

6. [Percents] \*  
 If the 10% tax on the price of a ticket was \$1.50, what was the total price of the ticket?  \$

7. [Integer  $+, -$ ] \*  
 $(8 - 4) - (4 - 8) =$

8. [Integer  $\times, \div$ ] \*  
 $(4 - 9) \times (6 - 3) =$

9. [Rates / Ratios] \*  
 It takes 2 minutes for Kahi to shell a bucket of peas. It takes her sister 14 minutes. How long would it take if they both worked together?  min  s

10. [Exponents] \*  
 Given  $\frac{1}{5^m} = 0.04$ , find the value of  $m$ .

11. [Square Roots / Radicals] \*  
 Simplify  $2 + 3\sqrt{2} + 5 - \sqrt{72}$

12. [Orders of Operations] \*  
 $(267 \div 6)^0 + 10 =$

13. [Exploring Number] \*  
 Kitchen chairs cost \$48 each. How many can I buy with \$200?

14. [Scientific Notation] \*  
 Evaluate  $(8 \times 10^{-3}) \div (2 \times 10^{-2})$

15. [Number Patterns] \*  
 Write the first four terms of the sequence  $t_n = n(n + 1)$  where  $n \geq 1$

16. [Expressions]  
 Using algebraic notation, write two consecutive whole numbers starting with  $2n - 1$ .

17. [Substitution] \*  
 Given  $I = \frac{V}{R}$ , find the current  $I$ , in Amps, when  $V = 240$  Volts and  $R = 1200$  Ohms.  Amps

18. [Expansion] \*  
 Expand  $(2r - 1)^2$

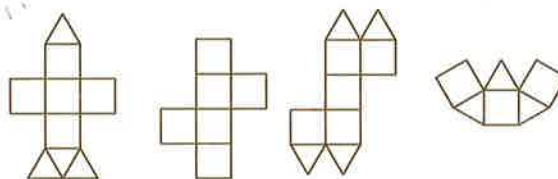
19. [Factorization] \*  
 Factor and simplify  $\frac{x^2 - 7x + 12}{x - 3}$

20. [Equations] \*  
 Solve for  $x$ :  $\frac{x}{4} - \frac{x}{2} = 6$

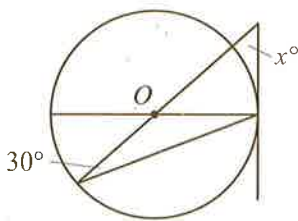
21. [Graphs & Functions]  
 Complete the table:

equation	slope	x-intercept	y-intercept
$y = 3x$			
$y = 3x - 3$			

22. [Exploring Geometry]  
 Circle the net that **cannot** be folded to form a model of a polyhedron.



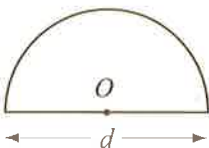
23. [Angles] \*  
Find the value of  $x^\circ$ .



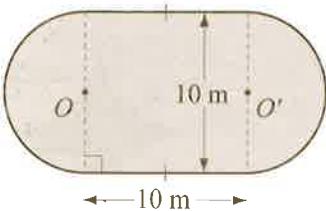

24. [Units of Measurement / Time]  
How many centimeters are there in  $d$  meters?

 cm

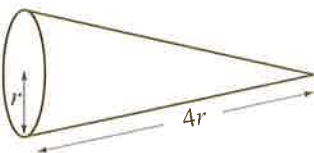
25. [Perimeter] \*  
Write a formula for the perimeter  $P$  of the shape.  
[Leave your answer as a multiple of  $\pi$ .]


  $P =$ 

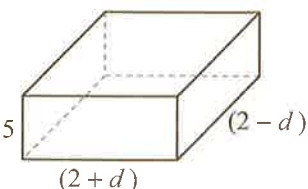
26. [Area] \*  
Find the area of the shaded region.  
(Use  $\pi \approx 3.14$ )


  $m^2$ 

27. [Surface Area] \*  
Write a simple formula for the surface area of the cone below in terms of the symbols given.  
[Leave your answer as a multiple of  $\pi$ .]


  $S.A. =$ 

28. [Volume] \*  
Write a formula for the volume  $V$  of the rectangular prism.


  $V =$ 

29. [Pythagorean Theorem / Trigonometry]  
A radio mast is 16 yd high. If support wires are to be attached three quarters of the way up the mast and anchored 9 yd from its base, how long must the support wires be?

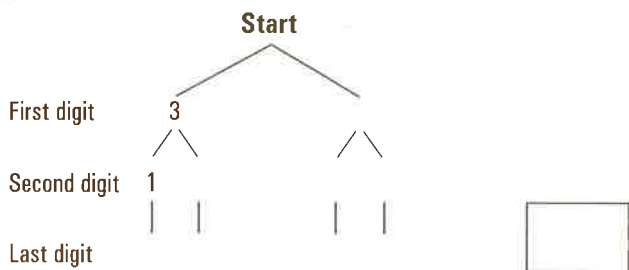
 yd

30. [Statistics]  
This stem-and-leaf plot shows the points scored by the Pittsburgh Steelers in the 2010 NFL regular season. Find the median and the lower quartile of the data.

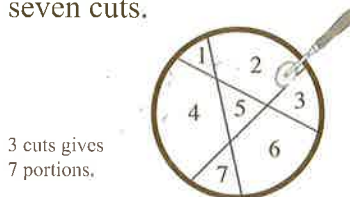
Stem	Leaf
1	0 3 4 5 7 9 9
2	3 3 6 7 7 8
3	5 8
4	1

 median =  LQ =

31. [Probability]  
How many different three-digit numbers greater than 200 can be made using the digits 1, 3 and 5 once each?  
[Complete the tree diagram to help solve the problem.]



32. [Problem Solving 1] \*  
A circular pizza can be cut into seven portions using just three straight cuts. Find the maximum number of portions obtainable using seven cuts.




33. [Problem Solving 2] \*  
If you calculated the following sum  
 $9 + 99 + 999 + 9999 + 99,999 + \dots$   
where the last number to be added consists of 99 digits of 9, how many times would the digit 1 appear in your answer?