

MATH'S MATE

Term 4 - Sheet 1



Name:

Parent's Signature: Need help? Free Skill Builders
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Due Date: / /

1. [Long \times ,+] *
 $670 \times 150 =$

100,500

2. [Decimal +,-] *
 $1 - 0.25 =$

0.75

3. [Decimal \times ,+] *
 $5.8 \div 0.1 =$

58

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

$\frac{17}{20}$

5. [Fraction \times ,+] *
 $\frac{4}{5} \times \frac{5}{16} =$

$\frac{1}{4}$

6. [Percents] *
Decrease 6000 by 7%

5580

7. [Decimals / Fractions / Percents] *
Which is greater:
 0.5 or $\frac{2}{3}$?

$\frac{2}{3}$

8. [Integers] *
 $-2 \times 4 \times 5 =$

-40

9. [Rates / Ratios] *
The ratio of strings to woodwind instruments in a baroque orchestra is 5 : 3. If there are 24 instruments in total, how many stringed instruments are there in the orchestra?

15

10. [Exponents]
Simplify $(a^y)^z$

a^{yz}

11. [Square Roots] *
 $\sqrt{25} - \sqrt{16} =$

1

12. [Exploring Number]
Choose the whole numbers from this list:
 $-6, 4, 3.14, 71, \frac{4}{5}, 0$

4, 71, 0

13. [Number Patterns] *
Write the first two terms of the sequence where
 $t_n = 4n - 6$ and $n \geq 1$

-2, 2

14. [Algebra - Expressions]
Simplify $16a \div 4$

4a

15. [Algebra - Substitution] *
If $y = x^3 + 1$, find y when $x = 2$

9

16. [Algebra - Expansion] *
Expand and simplify
 $2(t - 5) + 6(t + 1)$

$8t - 4$

17. [Algebra - Factorization]
Factor
 $a(a + 4) + 3(a + 4)$

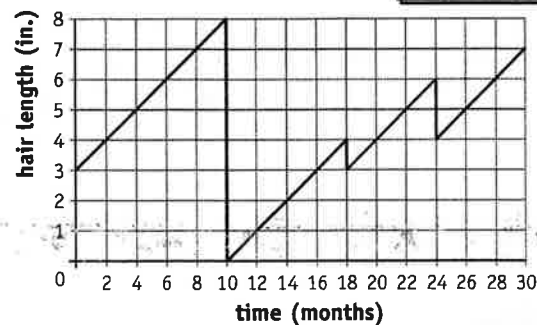
$(a + 4)(a + 3)$

18. [Algebra - Equations] *
Solve the inequality:
 $3x - 4 \geq 8$

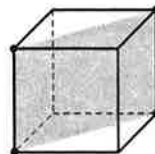
$x \geq 4$

19. [Algebra - Graphs & Functions] *
This graph shows Lola's hair length over two and a half years. How many months passed between the time she shaved her head and the next trim?

8 months

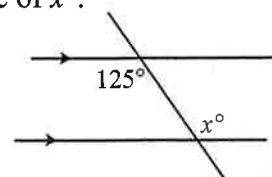


20. [Shapes]
Name the shape of the cross section drawn through this cube.



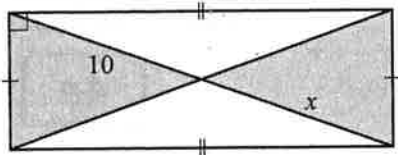
rectangle

21. [Angles]
Find the value of x° .



125°

22. [Exploring Geometry]
Find the value of x given the pair of shaded triangles are congruent.

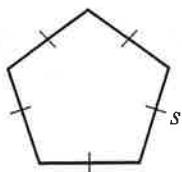


10

23. [Measuring] *
Convert 300 quarts to gallons.

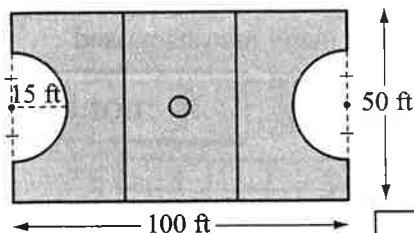
75 gal

24. [Perimeter] *
Write a formula for the perimeter P of the polygon.



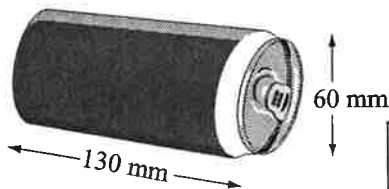
$$P = 5s$$

25. [Area] *
Use $\pi \approx 3.14$ to find the shaded area of a netball court, covered by the center player.



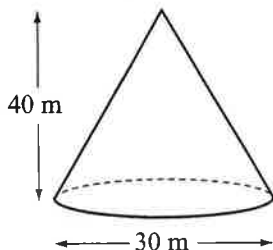
4293.5 ft²

26. [Surface Area] *
Using $S.A. = 2\pi r(r + h)$ and $\pi \approx 3.14$, find the surface area of the can.



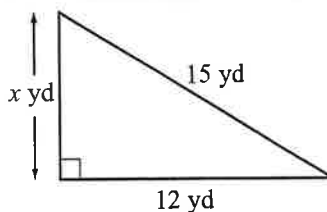
30,144 mm²

27. [Volume] *
Using $V = \frac{\pi r^2 h}{3}$ and $\pi \approx 3.14$, find the volume of the cone.



9420 m³

28. [Pythagorean Theorem] *
Find the perimeter of this right triangle by first calculating the missing side length.



36 yd

29. [Statistics]
Complete the stem-and-leaf plot for this set of data:

27, 15, 37, 16, 40, 29, 13, 35

stem	leaves
1	3 5 6
2	7 9
3	5 7
4	0

30. [Probability] *
Two coins are tossed at the same time. Find the probability of tossing a tail and a head.
[Complete the table.]

Possible outcomes	Coin 1	
	H	T
Coin 2	H	H,H H,T
	T	T,H T,T

or 0.5 $\frac{1}{2}$

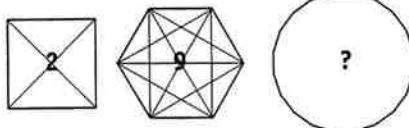
31. [Problem Solving 1] *
On a quiz, a correct response is awarded 2 points, but 1 point is deducted for each error. Lu received 9 points for his 15 answers. How many correct responses did he make?

8

32. [Problem Solving 2] *
If each corner of a square is joined to every other corner, 2 diagonals will have been drawn. If each vertex of a hexagon is joined, there would be 9 diagonals. How many diagonals can be drawn in a regular polygon with 20 sides?

Formula: Number of diagonals on a polygon with n sides

$$\frac{n(n-3)}{2}$$



170

MATH'S MATE

Term 4 - Sheet 2



Name:

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Parent's Signature:

1. [Long \times , \div] *
 $342 \times 260 =$

88,920

2. [Decimal $+$, $-$] *
 $10 - 0.07 =$

9.93

3. [Decimal \times , \div] *
 $0.067 \div 0.1 =$

0.67

4. [Fraction $+$, $-$] *
 $\frac{3}{8} - \frac{1}{3} =$

 $\frac{1}{24}$

5. [Fraction \times , \div] *
 $\frac{5}{9} \times \frac{3}{10} =$

 $\frac{1}{6}$

6. [Percents] *
Increase 400 by 12%.

448

7. [Decimals / Fractions / Percents] *
Which is greater?
40% or $\frac{1}{5}$

40%

8. [Integers] *
 $6 \times 2 \times (-2) =$

-24

9. [Rates / Ratios] *
A chainsaw is fueled with gasoline and oil in a ratio of 7 : 4. If together the tanks hold 22 oz, how much oil is in the oil tank?

8 oz

10. [Exponents]
Simplify $(b^3)^2$

 b^6

11. [Square Roots] *
 $\sqrt{36} + \sqrt{36} + \sqrt{36} + \sqrt{36} = \sqrt{144}$
True or false?

false

12. [Exploring Number]
Choose the integers from this list:

13, -4.5, -100, 8, $\frac{2}{15}$, $\frac{6}{3}$ 13, -100, 8, $\frac{6}{3}$

13. [Number Patterns] *
Write the first three terms of the sequence where
 $t_n = 15 - 2n$ and $n \geq 5$

5, 3, 1

14. [Expressions]
Simplify $(9r) \div (3r)$

3

15. [Substitution] *
If $a = 5$ and $b = 2$,
find the value of $\frac{a}{4} + \frac{b}{3}$

 $1\frac{11}{12}$

16. [Expansion] *
Expand and simplify
 $3(x - 3) + 7(x - 4)$

 $10x - 37$

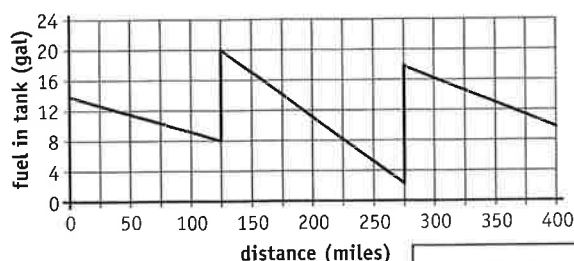
17. [Factorization]
Factor
 $c(c - 2) + 5(c - 2)$

 $(c - 2)(c + 5)$

18. [Equations] *
Solve the inequality:
 $2x + 1 < 7$

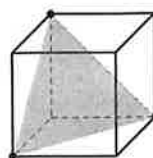
 $x < 3$

19. [Graphs & Functions] *
This graph shows the fuel level of a car during a 400 mile journey. How many miles had been completed when the second stop was made?



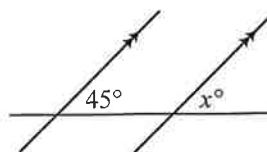
275 mi

20. [Shapes]
What type of triangle is the shape of the cross section drawn through this cube?



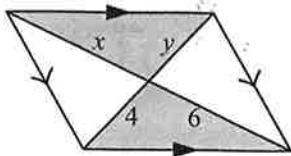
equilateral

21. [Angles]
Find the value of x° .



45°

22. [Exploring Geometry]
Find the values of x and y given the pair of shaded triangles are congruent.

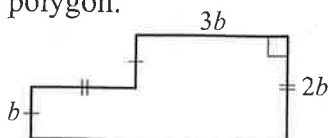


$$x = 6 \quad y = 4$$

23. [Units of Measurement / Time] *
The fuel capacity of a riding lawn mower is 1.5 gallons. What is this in pints?

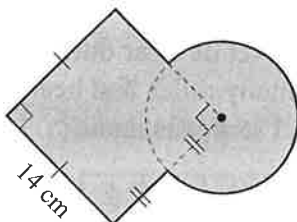
$$12 \text{ pt}$$

24. [Perimeter] *
Write a formula for the perimeter P of the polygon.



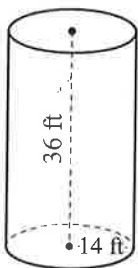
$$P = 14b$$

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



$$311.5 \text{ cm}^2$$

26. [Surface Area] *
Find the surface area of the cylinder, using $\pi \approx \frac{22}{7}$



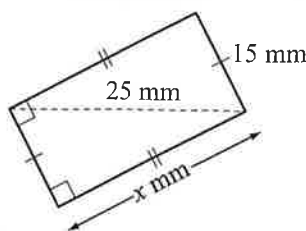
$$4400 \text{ ft}^2$$

27. [Volume] *
Using $V = \frac{4\pi r^3}{3}$ and $\pi \approx \frac{22}{7}$, find the volume of the spherical globe of the gum ball machine.



$$4851 \text{ in.}^3$$

28. [Pythagorean Theorem] *
Find the perimeter of this rectangle by first calculating the missing side length.



$$70 \text{ mm}$$

29. [Statistics]
Find the median of this set of data.

STEM | LEAF

10 | 0 5 9
11 | 4 6 6 8
12 | 0

Key
12 | 4 = 124

$$115$$

30. [Probability] *
A pair of standard dice are rolled. What is the probability of rolling at least one even number in the pair? [Complete the table.]

Possible outcomes

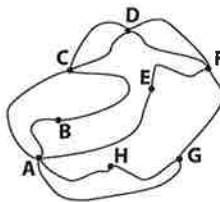
		Die 1					
		1	2	3	4	5	6
Die 2	1	(1,1)	(1,2)	(1,3)	(1,4)	(1,5)	(1,6)
	2	(2,1)	(2,2)	(2,3)	(2,4)	(2,5)	(2,6)
	3	(3,1)	(3,2)	(3,3)	(3,4)	(3,5)	(3,6)
	4	(4,1)	(4,2)	(4,3)	(4,4)	(4,5)	(4,6)
	5	(5,1)	(5,2)	(5,3)	(5,4)	(5,5)	(5,6)
	6	(6,1)	(6,2)	(6,3)	(6,4)	(6,5)	(6,6)



$$\frac{3}{4}$$

or 0.75

31. [Problem Solving 1] *
If you start at point A and travel every road once and only once, at which point would you finish?



$$G$$

32. [Problem Solving 2] *
A farmer was asked how many cows he had on his property. He replied that he was unsure, but he knew that when he counted them by twos, threes, fours, fives or sixes, he always had one left over. The only way he could avoid this was to count by sevens; he then had none left over. What is the smallest number of cows the farmer could possibly have owned?

$$301$$

MATH'S MATE

Term 4 - Sheet 3



Name:

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1. [Long \times , +] *

$$157 \times 240 =$$

37,680

2. [Decimal +, -] *

$$100 - 0.57 =$$

99.43

3. [Decimal \times , +] *

$$0.89 \div 0.01 =$$

89

4. [Fraction +, -] *

$$\frac{2}{9} - \frac{1}{12} =$$

$\frac{5}{36}$

5. [Fraction \times , +] *

$$\frac{7}{15} \times \frac{5}{21} =$$

$\frac{1}{9}$

6. [Percents] *

Increase 65 by 80%

117

7. [Decimals / Fractions / Percents] *

Write in ascending order:

$$\frac{1}{2}, 55\%, 0.05$$

0.05, $\frac{1}{2}$, 55%

8. [Integers] *

$$-2 \times (-5) \times (-5) =$$

-50

9. [Rates / Ratios] *

The ages of mother and son are in a ratio of 10 : 3. If the mother is 40 years old, how old is the son?

12 years

10. [Exponents]

$$\text{Simplify } (x^4)^2$$

x^8

11. [Square Roots] *

$$\sqrt{121} - \sqrt{81} =$$

2

12. [Exploring Number]

Choose the rational numbers from this list:

$$-4, \frac{6}{12}, 0.\overline{76}, \sqrt{5}, -\sqrt{9}$$

$-4, \frac{6}{12}, 0.\overline{76}, -\sqrt{9}$

13. [Number Patterns] *

Write the first four terms of the sequence where

$$t_n = n^2 - 1 \text{ and } n \geq 2$$

3, 8, 15, 24

14. [Algebra - Expressions] *

$$\text{Simplify } (-15tu) + (5u)$$

$-3t$

15. [Algebra - Substitution] *

$$\text{If } y = \frac{2x-3}{x}, \text{ find } y \text{ when } x = 3$$

1

16. [Algebra - Expansion] *

$$\text{Expand and simplify } 4(2vw + 1) + 3(vw - 5)$$

$11vw - 11$

17. [Algebra - Factorization]

$$\text{Factor } 3(g-5) - g(g-5)$$

$(g-5)(3-g)$

18. [Algebra - Equations] *

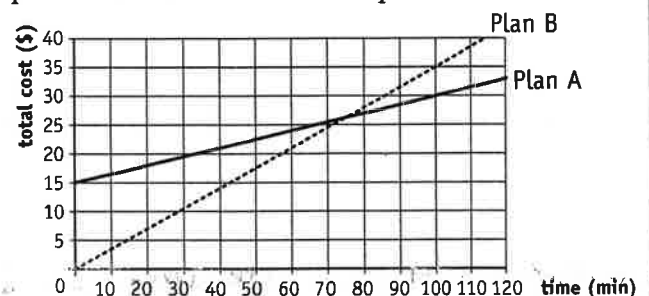
Solve the inequality:

$$\frac{x}{3} + 4 \leq 2$$

$x \leq -6$

19. [Algebra - Graphs & Functions] *

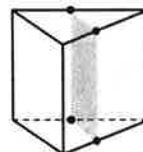
Two cellular telephone monthly plans are graphed below. What is the difference in cost per minute between the two plans?



\$ 0.20

20. [Shapes]

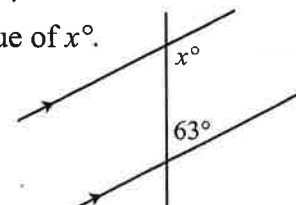
Name the shape of the cross section drawn through this triangular prism.



rectangle

21. [Angles] *

Find the value of x° .



117°

22. [Exploring Geometry]
Find the value of x in this pair of congruent triangles.

8

23. [Measuring] *
Coca-Cola Amatil uses 1.5 liters of water to make 1 liter of coca-cola drink. Express the difference in milliliters.

500 mL

24. [Perimeter] *
Write a formula for the perimeter P of the shape.

$P = \pi r + 2r$
 or $r(\pi + 2)$

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

1413 mm²

26. [Surface Area] *
The kindergarten students are making labels to cover soft drink cans for a charity drive. Each label will cover the entire lateral surface area of a can. Using $\pi \approx \frac{22}{7}$ find the surface area that needs to be covered for each can.

46.75 in.²

27. [Volume] *
Find the volume of this lid in the shape of a hemisphere, using $\pi \approx 3.14$ [Round the answer to the nearest whole number.]

3617 cm³

28. [Pythagorean Theorem] *
Find the perimeter of this rhombus by first calculating the missing side length.

100 in.

29. [Statistics] *
Find the median and range of the monthly, average high temperatures for Boston.

stem	leaves
3	5 7
4	0 5
5	2 5
6	2 6
7	2 6 8
8	1

median = 58.5 range = 46

30. [Probability] *
A coin is tossed and a die is rolled. What is the probability of tossing tails and rolling an odd number? [Complete the tree diagram.]

$\frac{1}{4}$
 or 0.25

31. [Problem Solving 1] *
Find the value of the product

$\left(1 + \frac{1}{2}\right) \left(1 + \frac{1}{3}\right) \left(1 + \frac{1}{4}\right) \left(1 + \frac{1}{5}\right)$

3

32. [Problem Solving 2] *
Three women and three children wish to cross a river in a canoe that will hold only one woman or two children. They can all row on their own but no one can swim. If a one way trip in the canoe takes ten minutes, what is the minimum time in which all six people can cross the river?

150 min

MATH'S MATE

Term 4 - Sheet 4



Name:

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1. [Long \times ,+] *
 $268 \times 320 =$

85,760

2. [Decimal +,-] *
 $10 - 0.0289 =$

9.9711

3. [Decimal \times ,+] *
 $23.04 \div 0.1 =$

230.4

4. [Fraction +,-] *
 $\frac{1}{6} + \frac{3}{10} =$

$\frac{7}{15}$

5. [Fraction \times ,+] *
 $\frac{5}{8} \times \frac{12}{15} =$

$\frac{1}{2}$

6. [Percents] *
Decrease 200 by 3%

194

7. [Decimals / Fractions / Percents] *
Write in order from largest to smallest:

70%, 0.72, $\frac{3}{4}$

$\frac{3}{4}$, 0.72, 70%

8. [Integers] *
 $(-3) \times 6 \times (-3) =$

54

9. [Rates / Ratios] *
The ratio of molars to all teeth in healthy human adults is 3 : 8. If adults have 32 teeth, how many molars do adults have?

12

10. [Exponents] *
Simplify $3(y^5)^2$

$3y^{10}$

11. [Square Roots] *
 $\sqrt{4} + \sqrt{5} = \sqrt{9}$
True or false?

false

12. [Exploring Number]
Which numbers are rational?

A) $\sqrt{25}$

B) $\sqrt{18}$

C) -7.7725

D) π

A and C

13. [Number Patterns] *
Write the first four terms of the sequence where $t_n = (-1)^n$ and $n \geq 10$

1, -1, 1, -1

14. [Algebra - Expressions] *
Simplify $(-24x^2) \div (6x)$

$-4x$

15. [Algebra - Substitution] *
If $y = x^2(x - 1)$, find y when $x = -2$

-12

16. [Algebra - Expansion] *
Expand and simplify
 $k(k + 1) - k(k - 5)$

6k

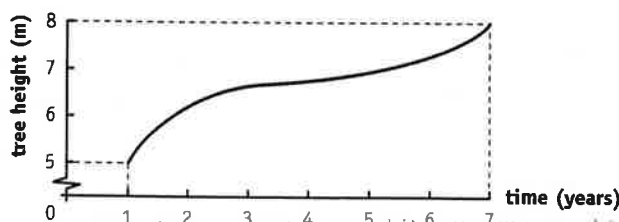
17. [Algebra - Factorization] *
Factor
 $v^2 + 6v + v + 6$

$(v + 6)(v + 1)$

18. [Algebra - Equations] *
Solve the inequality:
 $\frac{x}{5} - 1 \leq 9$

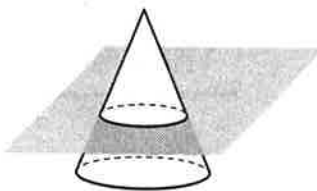
$x \leq 50$

19. [Algebra - Graphs & Functions] *
What was the average rate of increase in the height of the tree over the 6 year period shown?



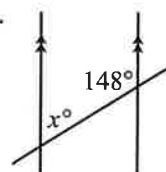
50 cm/year

20. [Shapes]
Name the shape of the cross section drawn through this cone.



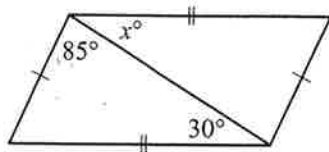
circle

21. [Angles] *
Find the value of x° .



32°

22. [Exploring Geometry]
Find the value of x° in this pair of congruent triangles.

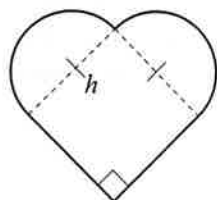


30°

23. [Measuring] *
Your set of measuring cups consists of one, a half, a third and a quarter cup measures. If one cup equals 240 milliliters, how many liters does your set hold?

0.5 L

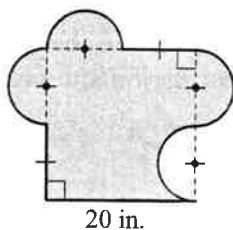
24. [Perimeter] *
Write a formula for the perimeter P of the shape.



or $h(2 + \pi)$

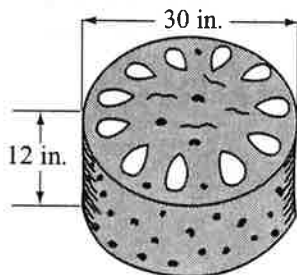
$$P = 2h + \pi h$$

25. [Area] *
Find the area of the shaded shape using $\pi \approx 3.14$



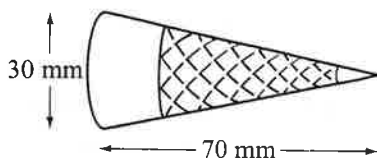
478.5 in.²

26. [Surface Area] *
Using $\pi \approx 3.14$ find the surface area of the cylindrical cake, excluding its base.



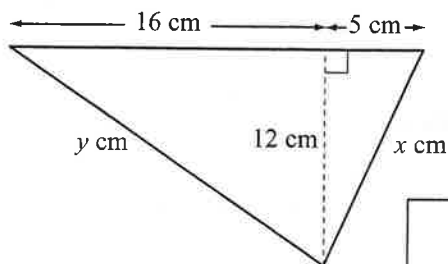
1836.9 in.²

27. [Volume] *
Using $\pi \approx \frac{22}{7}$ find the volume of the ice cream cone.



16,500 mm³

28. [Pythagorean Theorem] *
Find the perimeter of this triangle by first calculating the missing side lengths.



54 cm

29. [Statistics] *
Find the median and mode of the winning numbers in five consecutive Lotto draws.

STEM	LEAF
0	2 3 7 7 7
1	1 1 4 5 7 7 8 9
2	1 1 3 3 5 6 9
3	1 3 5 7 8
4	0 1 3 6 7

median = 22 mode = 7

30. [Probability] *
A die is tossed and a spinner labeled 1, 2 and 3 is spun. What is the probability of obtaining a total of 7 when the die is tossed and the spinner is spun once? [Complete the table.]

		Die					
Total value		1	2	3	4	5	6
Spinner	1	2	3	4	5	6	7
	2	3	4	5	6	7	8
	3	4	5	6	7	8	9

or 0.166

$\frac{1}{6}$

31. [Problem Solving 1] *
How many numbers are there from 10 to 99 in which the digits differ by 4?

11

32. [Problem Solving 2] *
What is the last digit of the number 4^{2012} ?

6

MATH'S MATE

Term 4 - Sheet 5



Name:

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1. [Long \times , \div] *
 $965 \div 2 =$

482.5

2. [Decimal $+$, $-$] *
 $7 - 1.3 =$

5.7

3. [Decimal \times , \div] *
 $0.8 \div 0.2 =$

4

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

$5\frac{2}{5}$

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

$\frac{2}{15}$

6. [Percents] *
A recommended daily allowance of iron for teenagers is 12 mg. You consume an extra 25%. What is your total iron intake for the day?

15 mg

7. [Decimals / Fractions / Percents] *
How much interest would Paula get if she invests \$1000 for 2 years at an interest rate of 9% per year?

[Simple Interest = Principal \times Rate \times Time]

\$180

8. [Integers] *
 $9 \div (-3) \div 3 =$

-1

9. [Rates / Ratios] *
The horned sungem, a hummingbird from South America, can beat its wings 5400 times a minute. What is the average rate in beats per second?

90 beats/s

10. [Exponents] *
Simplify $(2x^2)^3 \cdot x^5$

$8x^{11}$

11. [Square Roots]
Between which two consecutive whole numbers does $\sqrt{7}$ lie?

2 and 3

12. [Exploring Number]
Which is **not** a rational number?

- A) -4.565 B) $\frac{25}{144}$
C) $\sqrt{900}$ D) π

D

13. [Number Patterns] *

number (n)	1	2	3	4	5
term t_n	4	6	8	10	12

The rule for the general term of this sequence is:

- A) $2n$ B) $2n + 1$
C) $2n + 2$ D) $3n + 1$

C

14. [Algebra - Expressions] *
Simplify $9 + 3ab - ab - 4$

$5 + 2ab$

15. [Algebra - Substitution] *
Use $S.A. = 2\pi r(r + h)$ to find the surface area of a cylinder when $\pi \approx 3.14$, $r = 5$ and $h = 15$

628

16. [Algebra - Expansion] *
Expand and simplify
 $(x + 1)(x + 2)$

$x^2 + 3x + 2$

17. [Algebra - Factorization] *
Factor $b^2 - 16$

$(b + 4)(b - 4)$

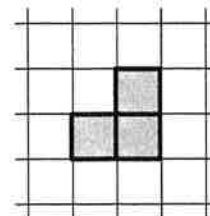
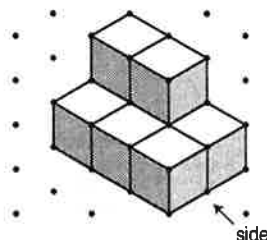
18. [Algebra - Equations] *
Solve for x :
 $(x + 1)(x - 4) = 0$

-1, 4

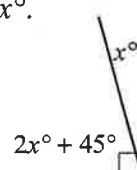
19. [Algebra - Graphs & Functions] *
Use the formula $m = \frac{y_2 - y_1}{x_2 - x_1}$ to find the slope of \overleftrightarrow{AB} , where $A(3, 5)$ and $B(0, -7)$

4

20. [Shapes]
Draw the side view of this solid.



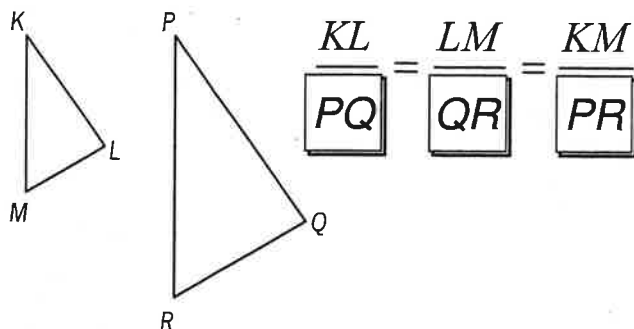
21. [Angles] *
Find the value of x° .



15°

22. [Exploring Geometry]

Complete the ratios of corresponding sides for these similar triangles.



23. [Measuring] *

Convert 180 ft^2 to yd^2 .

$$20 \text{ yd}^2$$

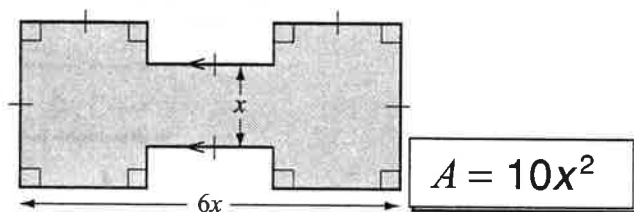
24. [Perimeter] *

The perimeter of a rhombus is 96 yards. What is the side length?

$$24 \text{ yd}$$

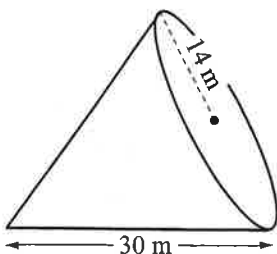
25. [Area] *

Write a formula for the area A of the shaded shape.



26. [Surface Area] *

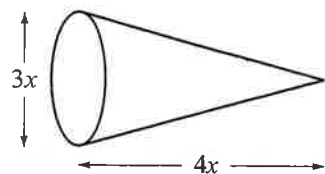
Use $S.A. = \pi r(r + s)$ and $\pi \approx \frac{22}{7}$ to find the surface area of the cone.



$$1936 \text{ m}^2$$

27. [Volume] *

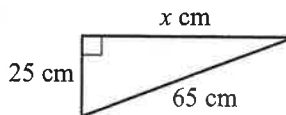
Write a formula for the volume V of the cone.



$$V = 3\pi x^3$$

28. [Pythagorean Theorem] *

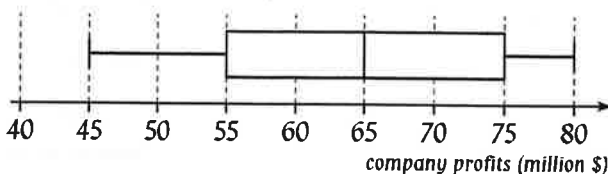
Find the area of this right triangle by first calculating the missing side length.



$$750 \text{ cm}^2$$

29. [Statistics]

For this box-and-whisker plot showing a set of company profits, find the median and range.



$$\text{median} = 65 \quad \text{range} = 35$$

30. [Probability] *

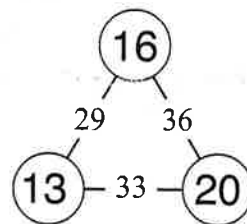
A 52-card deck of playing cards is shuffled and one card is dealt from the top of the deck. What is the probability that it is a king of hearts or a spade?



$$\frac{7}{26}$$

31. [Problem Solving 1] *

Enter numbers in the circles so that the numbers on each line equal the sum of the numbers at each end.



32. [Problem Solving 2] *

At recess time five young students were discussing the new teacher.

"He's fabulously handsome, and only 32," said Macala.

"Nonsense!" cried Lauren. "He's not a day over 30."

"I'm sure he's at least 33," frowned Misty.

"He's definitely over 28," said Deanne.

But Zoe had the last word.

"I happen to know he's under 30," she sniffed.

Only one girl was right.

How old is the teacher?

$$31$$

MATH'S MATE

Term 4 - Sheet 6



Name:

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1. [Long \times , \div] *

$$804 \div 5 =$$

160.8

2. [Decimal $+$, $-$] *

$$3 - 0.75 =$$

2.25

3. [Decimal \times , \div] *

$$0.06 \div 0.006 =$$

10

4. [Fraction $+$, $-$] *

$$1\frac{5}{9} + 4\frac{7}{9} =$$

$6\frac{1}{3}$

5. [Fraction \times , \div] *

$$\frac{4}{9} \div 3 =$$

$\frac{4}{27}$

6. [Percents] *

Gasoline goes up by 5% tomorrow. If I pay \$2.80 per gallon today, what will I pay tomorrow?

\$2.94 /gal

7. [Decimals / Fractions / Percents] *

How much interest would Stefano pay on his credit card after 2 years if he owed \$1200 at an interest rate of 15% per year?

[Simple Interest = Principal \times Rate \times Time]

\$360

8. [Integers] *

$$-7 \times 7 \div 7 =$$

-7

9. [Rates / Ratios] *

In United States the minimum federal wage is \$6.55 per hour. At this rate, what is the pre-tax wage for an 8 hour shift?

\$52.40

10. [Exponents] *

$$\text{Simplify } a^3b \cdot (ab^4)^2$$

a^5b^9

11. [Square Roots] *

Between which two consecutive whole numbers does $\sqrt{15}$ lie?

3 and 4

12. [Exploring Number]

Choose the irrational numbers from this list:

$$-\frac{1}{2}, \pi, -60, \sqrt{\frac{3}{4}}, \sqrt{200}$$

$$\pi, \sqrt{\frac{3}{4}}, \sqrt{200}$$

13. [Number Patterns] *

number (n)	1	2	3	4	5	...
term t_n	0.5	1.5	2.5	3.5	4.5	...

The rule for the general term of this sequence is:

A) $n - 0.5$

B) $2n$

C) $\frac{n}{2}$

D) $\frac{n}{4}$

A

14. [Algebra - Expressions] *

Simplify $2y + 6z - 5y - 4z$

$-3y + 2z$

15. [Algebra - Substitution] *

Use $A = \pi r^2$ to find the area of a circle when

$$\pi \approx 3\frac{1}{7} \text{ and } r = 7$$

154

16. [Algebra - Expansion] *

Expand and simplify
 $(h - 2)(h + 3)$

$h^2 + h - 6$

17. [Algebra - Factorization] *

Factor $144 - x^2$

$(12 + x)(12 - x)$

18. [Algebra - Equations] *

Solve for x :

$$(x + 2)(x + 3) = 0$$

-2, -3

19. [Algebra - Graphs & Functions] *

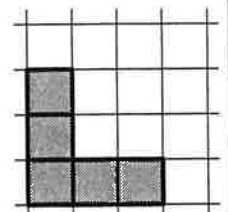
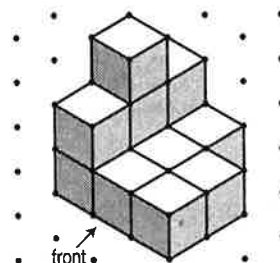
Use the formula $m = \frac{y_2 - y_1}{x_2 - x_1}$ to find the slope of

\overrightarrow{OD} , where $O(0,0)$ and $D(-5,1)$

$-\frac{1}{5}$

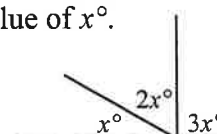
20. [Shapes]

Draw the front view of this solid.



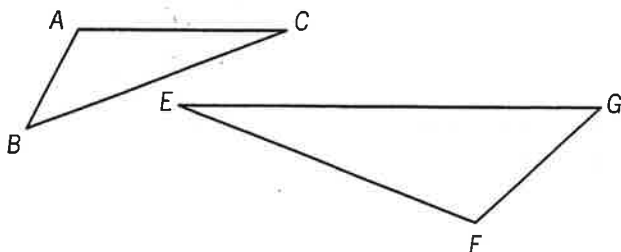
21. [Angles] *

Find the value of x° .



30°

22. [Exploring Geometry]
Complete the pairs of congruent angles for these similar triangles.

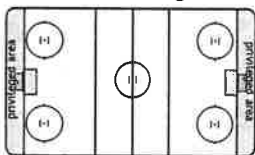


$$\angle A \equiv \angle F, \angle B \equiv \angle G, \angle C \equiv \angle E$$

23. [Measuring] *
Convert 5 ft^2 to in^2

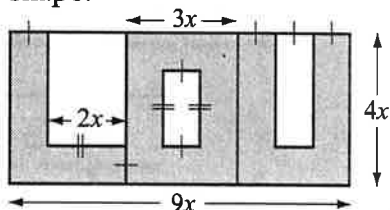
$$720 \text{ in}^2$$

24. [Perimeter] *
A rectangular ice hockey field, excluding the privileged area, has a perimeter of 374 feet. Given the length is 100 feet, what is its width?



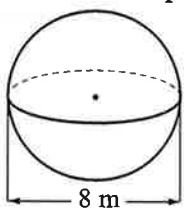
$$87 \text{ ft}$$

25. [Area] *
Write a formula for the area A of the shaded shape.



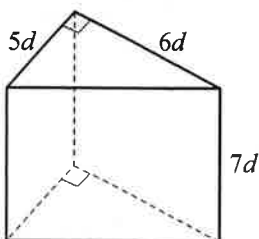
$$A = 25x^2$$

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



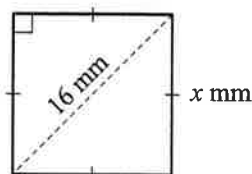
$$200.96 \text{ m}^2$$

27. [Volume] *
Write a formula for the volume V of the prism.



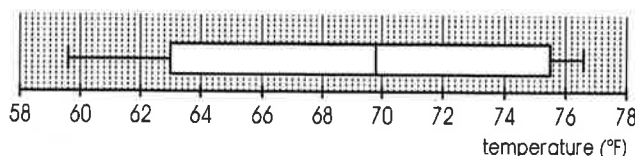
$$V = 105d^3$$

28. [Pythagorean Theorem] *
Find the area of this square by first calculating the missing side length.



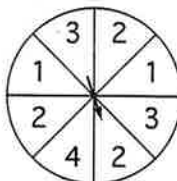
$$128 \text{ mm}^2$$

29. [Statistics] *
For this box-and-whisker plot showing the monthly, average low temperatures for Miami, find the median and range.



$$\text{median} = 69.8 \quad \text{range} = 17$$

30. [Probability] *
This spinner is spun once. What is the probability of spinning a 1 or a 3?

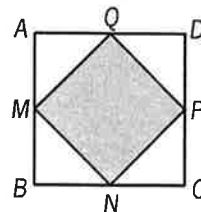


or 0.5

$$\frac{1}{2}$$

31. [Problem Solving 1] *
 M , N , P and Q are the midpoints of the sides of square $ABCD$. What is the ratio of the area of square $MNPQ$ to the area of square $ABCD$?

- A) 1 : 2
B) 1 : 4
C) 2 : 1



$$A$$

32. [Problem Solving 2] *
Place the digits 1, 2, 3, 4, 5 and 6 into the squares so that the multiplication problem is correct.

$$\begin{array}{r} \begin{array}{|c|c|} \hline 5 & 4 \\ \hline \end{array} \\ \times \quad \begin{array}{|c|} \hline 3 \\ \hline \end{array} \\ \hline \begin{array}{|c|c|c|} \hline 1 & 6 & 2 \\ \hline \end{array} \end{array}$$

MATH'S MATE

Term 4 - Sheet 7



Name:

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1. [Long \times , \div] *
 $1221 \div 4 =$

305.25

2. [Decimal $+$, $-$] *
 $8 - 0.374 =$

7.626

3. [Decimal \times , \div] *
 $10.15 \div 0.7 =$

14.5

4. [Fraction $+$, $-$] *
 $4\frac{3}{7} - 1\frac{4}{7} =$

$2\frac{6}{7}$

5. [Fraction \times , \div] *
 $\frac{3}{7} \div 6 =$

$\frac{1}{14}$

6. [Percents] *
In 1930 in the USA there were 3900 million movie goers. By 1970 this figure fell by 75%. How many million people went to the movies in the USA in 1970?

975

7. [Decimals / Fractions / Percents] *
Derek invested \$850 at 6% simple interest for 5 years. Using $SI = PRT$, how much interest did Derek earn?

\$255

8. [Integers] *
 $-10 \times 10 \div (-4) =$

25

9. [Rates / Ratios] *
On average, hair grows at a rate of 0.125 inches per week. How many inches does hair grow in 4 weeks?

0.5 in.

10. [Exponents] *
Simplify $\left(\frac{e^4}{3}\right)^3$

$\frac{e^{12}}{27}$

11. [Square Roots]
Between which two consecutive whole numbers does $\sqrt{40}$ lie?

6 and 7

12. [Exploring Number]
Which is an irrational number?

- A) 10^{-6} B) $\sqrt{400}$
C) $-\sqrt{2}$ D) 2.161616...

C

13. [Number Patterns] *
Express t_n in terms of n given the table of values for the sequence.

number (n)	1	2	3	4	5	n
term t_n	8	9	10	11	12	$n + 7$

$t_n = n + 7$

14. [Algebra - Expressions] *
Simplify $3n^2 - n^2 - 2n - n^2$

$n^2 - 2n$

15. [Algebra - Substitution] *
Use $c^2 = a^2 + b^2$ to find the value of $c > 0$ when $a = 5$ and $b = 12$

13

16. [Algebra - Expansion] *
Expand and simplify $(q + 4)(q - 6)$

$q^2 - 2q - 24$

17. [Algebra - Factorization] *
Factor $4y^2 - 36$

$4(y + 3)(y - 3)$

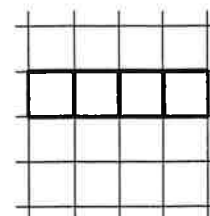
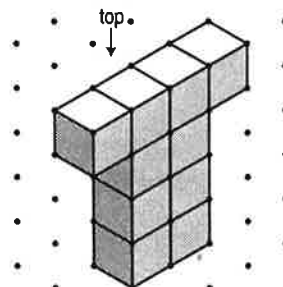
18. [Algebra - Equations] *
Solve for x : $x^2 = 25$

5, -5

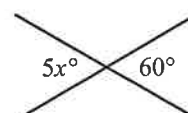
19. [Algebra - Graphs & Functions] *
Use $y - y_1 = m(x - x_1)$ where $m = \frac{y_2 - y_1}{x_2 - x_1}$ to find the equation of the line joining the points $M(-1, 3)$ and $N(-4, 0)$

$y = x + 4$

20. [Shapes]
Draw the top view of this solid.



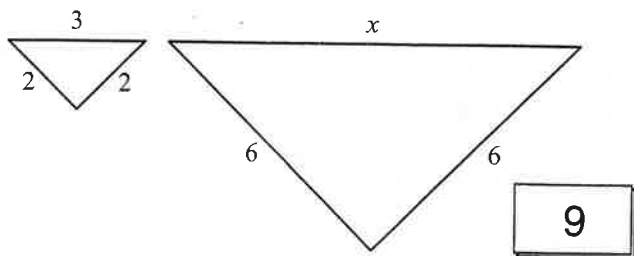
21. [Angles] *
Find the value of x° .



12°

22. [Exploring Geometry] *

Find the value of x in this pair of similar triangles. [All measurements are in inches.]



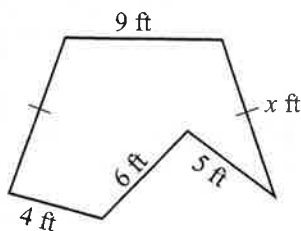
23. [Measuring]

The Old Town Square in Prague is 9000 m^2 . Express this in square kilometers.

$$0.009 \text{ km}^2$$

24. [Perimeter] *

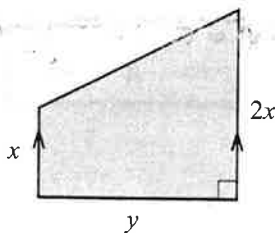
The perimeter of the shape is 46 feet. Find the unknown side length.



$$11 \text{ ft}$$

25. [Area] *

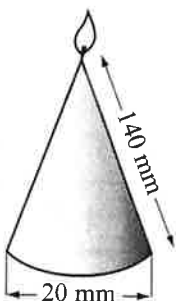
Write a formula for the area A of the trapezoid.



$$A = \frac{3xy}{2}$$

26. [Surface Area] *

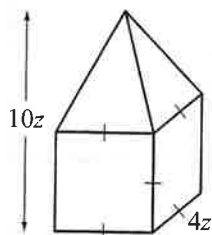
Use $\pi \approx 3.14$ to find the surface area of the conical candle.



$$4710 \text{ mm}^2$$

27. [Volume] *

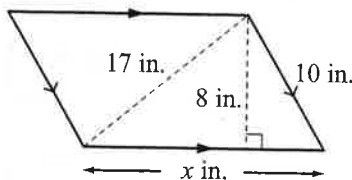
Write a formula for the volume V of the cube which has a regular square pyramid on top.



$$V = 96z^3$$

28. [Pythagorean Theorem] *

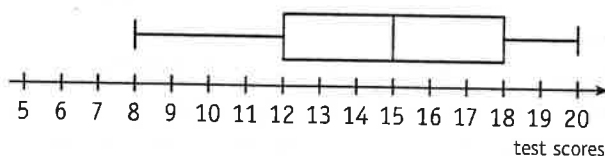
Find the area of this parallelogram by first calculating the missing side length.



$$168 \text{ in.}^2$$

29. [Statistics]

For this box-and-whisker plot showing a set of Math test scores, find the median and lower quartile (LQ).



$$\text{median} = 15 \quad \text{LQ} = 12$$

30. [Probability] *

A bowl contains 30 marbles numbered 1 to 30. A marble is drawn from the bowl. Find the probability of drawing a multiple of 5 or a multiple of 8.

or 0.3

$$\frac{3}{10}$$

31. [Problem Solving 1] *

The average of six numbers is 8.5. A further two numbers are added and the average is still 8.5. What is the sum of these two numbers?

$$17$$

32. [Problem Solving 2] *

A bi-athlete travels 20 miles in $2\frac{1}{4}$ hours. She cycles part of the way at 12 mph and runs the rest at 5 mph. How far did she run?

$$5 \text{ mi}$$

MATH'S MATE

Term 4 - Sheet 8



Name:

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1. [Long \times , \div] *
 $1894 \div 8 =$ 236.75

2. [Decimal $+$, $-$] *
 $16 - 0.041 =$ 15.959

3. [Decimal \times , \div] *
 $2.88 \div 0.9 =$ 3.2

4. [Fraction $+$, $-$] *
 $6\frac{1}{8} - 2\frac{3}{8} =$ $3\frac{3}{4}$

5. [Fraction \times , \div] *
 $\frac{5}{8} \div 15 =$ $\frac{1}{24}$

6. [Percents] *
A book was discounted by 20% to \$16.20. How much was the book before the discount? \$20.25

7. [Decimals / Fractions / Percents] *
Find the balance of an account with \$900 invested at a 3% simple interest for 4 years. \$1008

8. [Integers] *
 $18 \div (-9) \times (-3) =$ 6

9. [Rates / Ratios] *
In 2007, on average, USA population grew by 1 person every 11 seconds. Approximately how many people is that in one hour? 327

10. [Exponents] *
Simplify $\frac{10t^2 \cdot 5t^5}{2t^4}$ 25t³

11. [Square Roots] *
Between which two consecutive whole numbers does $\sqrt{83}$ lie? 9 and 10

12. [Exploring Number]
Choose the irrational numbers from this list:
 $-\sqrt{2}, \frac{4}{15}, \sqrt{100}, \pi, \sqrt{10}$ $-\sqrt{2}, \pi, \sqrt{10}$

13. [Number Patterns] *
Express t_n in terms of n given the table of values for the sequence.

number (n)	1	2	3	4	5	...	n
term t_n	4	8	12	16	20	...	$4n$

or n $t_n = 4 \cdot n$

14. [Algebra - Expressions] *
Simplify $4a^2 - ab - a^2 + 4ab$ $3a^2 + 3ab$

15. [Algebra - Substitution] *
Use $a^2 = c^2 - b^2$ to find the value of $a > 0$ when $c = 15$ and $b = 9$ 12

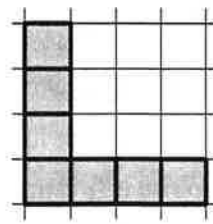
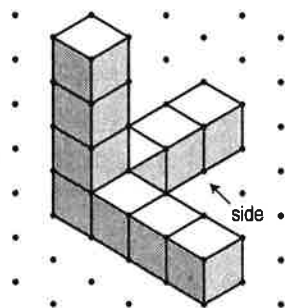
16. [Algebra - Expansion]
Expand $(m + 2)(n - 7)$ $mn - 7m + 2n - 14$

17. [Algebra - Factorization] *
Factor $25a^2 - 100$ $25(a + 2)(a - 2)$

18. [Algebra - Equations] *
Solve for x : $x^2 = 64$ 8, -8

19. [Algebra - Graphs & Functions] *
Use $y - y_1 = m(x - x_1)$ where $m = \frac{y_2 - y_1}{x_2 - x_1}$ to find the equation of the line joining the points $C(1, 7)$ and $D(-3, -1)$ $y = 2x + 5$

20. [Shapes]
Draw the side view of this solid.

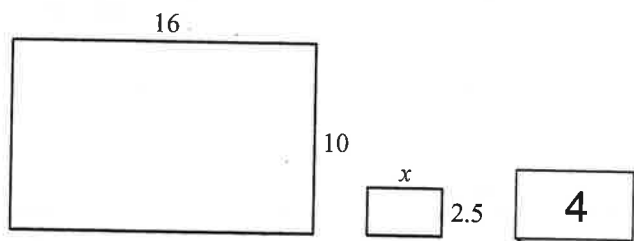


21. [Angles] *
Find the value of x° .

40°

Quote of the week: Whatever you do or dream you can, begin it. Boldness has genius, power and magic in it. Begin it now. Goethe

22. [Exploring Geometry] *
Find the value of x in this pair of similar rectangles. [All measurements are in inches.]



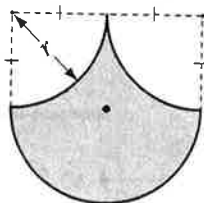
23. [Measuring] *
The world's largest island in a freshwater lake is Manitoulin Island in Lake Huron, Canada, with an area of 2765 km^2 . Express this in square meters.

$$2,765,000,000 \text{ m}^2$$

24. [Perimeter] *
What is the perimeter of a square with an area of 81 mm^2 ?

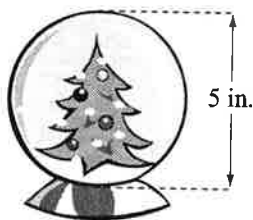
$$36 \text{ mm}$$

25. [Area] *
Write a formula for the area A of the shaded shape.



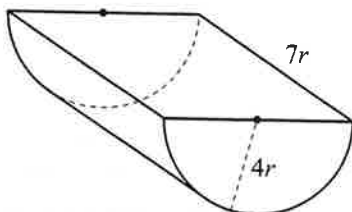
$$A = 2r^2$$

26. [Surface Area] *
Using $\pi \approx 3.14$ find the surface area of the snow globe.



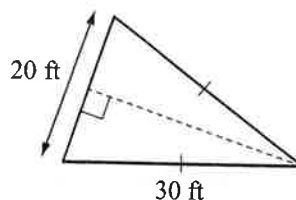
$$78.5 \text{ in.}^2$$

27. [Volume] *
Write a formula for the volume V of the half cylinder.



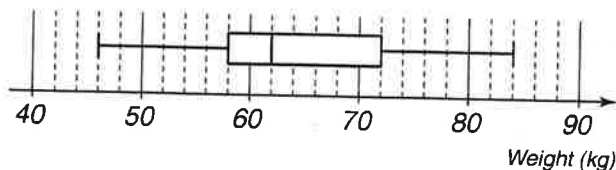
$$V = 56\pi r^3$$

28. [Pythagorean Theorem] *
Find the area of this triangle. [Reduce the radical to simplest form.]



$$200\sqrt{2} \text{ ft}^2$$

29. [Statistics]
For this box-and-whisker plot showing a set of student weights, find the lower quartile (LQ) and upper quartile (UQ).



$$\text{LQ} = 58 \quad \text{UQ} = 72$$

30. [Probability] *
There are 12 choc chip, 3 milk choc macadamia, 13 rainbow and 2 caramel classic cookies in the cookie jar. If a cookie is chosen at random, what is the probability it will be a choc chip or a caramel classic?

$$\frac{7}{15}$$

31. [Problem Solving 1] *
If you double Rob's age and subtract 1, the result is a prime number. Rob is less than 20 years old. If the sum of the digits in Rob's age is divisible by 5, how old is Rob?

$$19$$

32. [Problem Solving 2] *
In a Math competition with 15 questions, 6 points are awarded for each correct response, 0 points for each incorrect response and 3 points are awarded for no response. Mark scored 51 points in this competition. What is the greatest number of incorrect responses he could have had?

$$6$$