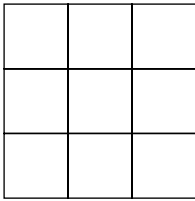


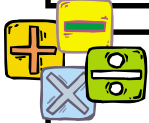
Problems of the Week



Visual



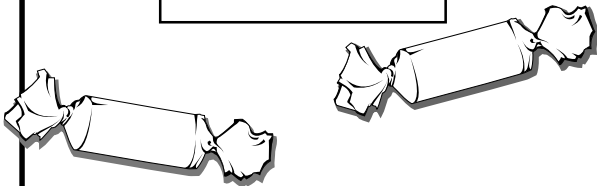
Place the numbers $-5, -4, -3, -2, -1, 0, 1, 2, 3$ in the diagram's squares so that the sum along each row, column, and diagonal is -3 .



Multi-Step

Which is the best buy? Why?

Jolly Ranchers
8 oz. for \$.65
12 oz. for \$.99
16 oz. for \$1.29
20 oz. for \$1.75

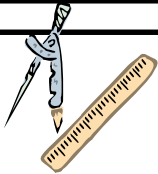


Data/Investigations

The probability that the first grandchild in a family is a girl is 50%. The probability that the first two grandchildren are both girls is 25%. Complete the table.

Number of Grandchildren	Probability That All Are Girls
1	50%
2	25%
3	_____
4	_____
5	_____
6	_____

Display the results on a scatter plot. Is this a positive or a negative correlation? Why?



Geometry/Measurement

The club house floor is a rectangle that is $25' \times 40'$ in size. The officers voted to put a 6-foot sidewalk all around the building, leaving a 2-foot space for plants between the building and the sidewalk. Draw the sketch they might have used to explain their plan and give the perimeter of the outer edge of the sidewalk and the area of the sidewalk itself.



Problem-Solving Strategies

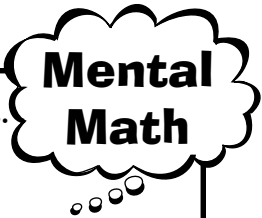
Making an Organized List

Mrs. Smith sold 100 shares of stock for \$5,975. When the price per share went down \$5, she bought 200 more shares. When the price per share went back up \$3, she sold 100 shares. How much did Mrs. Smith gain or lose in her transactions?



What Do You Say?

Explain how to figure out how many liters are in a cubic meter.



*See answer key. This section should not be duplicated for the students.

1. Find k : $\frac{4}{7} = \frac{k}{35}$
2. What percent of 25 is 5?
3. $\frac{3}{4}(16 + 4)$
4. Jane marked up a \$20 shirt 50%, what is the new price?
5. What is the volume of a cube with sides measuring 3 cm?
6. $(-8x^2)^2$
7. What is $33\frac{1}{3}\%$ of 15?
8. $78 \div 100$
9. $14(0.01)$
10. Solve for x : $4x + 1 = 21$.



Keeping Skills Sharp

Write answers here:

- | | |
|---|-----------|
| 1. Solve for x : $x^2 + 18 = 9 \cdot 6$ | 1. _____ |
| 2. $x + 12 = 8$ Solve for x . | 2. _____ |
| 3. $-2.6 \cdot -8 =$ | 3. _____ |
| 4. Solve for n : $n - 6 = -10$ | 4. _____ |
| 5. Write in standard form: 1.41×10^{-7} | 5. _____ |
| 6. Write the expression for 5 less than a number. | 6. _____ |
| 7. Solve for y : $\frac{1}{18}y = -10$ | 7. _____ |
| 8. $70 \text{ m} =$ _____ cm | 8. _____ |
| 9. Write as a percent: $.09$ | 9. _____ |
| 10. $-145 \div .25 =$ | 10. _____ |

Answer Key



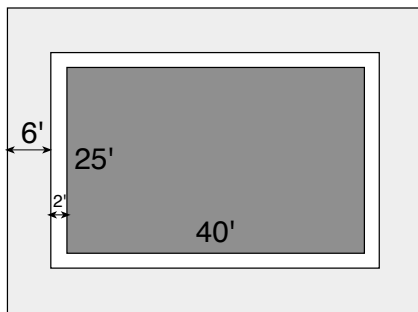
Visual

2	-5	0
-3	-1	1
-2	3	-4

Multi-Step

16 oz. is the best buy.

Geometry/Measurement



$P = 194$ ft.
 $A = 1020$ sq. ft.

Data/Investigations

- 50
- 25
- 12.5
- 6.25
- 3.125
- 1.5625
- .78125

This is a negative correlation. The probability decreases as the number of grandchildren increases.

Problem-Solving Strategies

Answer: \$800 gain

What Do You Say?

A cube with a meter as the length of each edge would have dimensions of 100 centimeters \times 100 centimeters \times 100 centimeters. A milliliter is the volume of one cubic centimeter. One cubic meter or 1,000,000 cubic centimeters would hold 1,000,000 milliliters. One liter is equivalent to 1,000 milliliters; therefore, a cubic meter would hold 1,000 liters.

Mental Math

- 20
- 20%
- 15
- \$30
- 27 cm^3
- $64x^4$
- 5
- 0.78
- 0.14
- $x = 5$

This section provides an oral drill for sharpening one's mental computation. Before each session give these directions, "Number your paper from 1 to 10. Write your answer as the questions are called out. Each question will be repeated one time only."

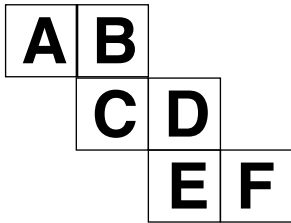
Keeping Skills Sharp

- 6, 6
- 4
- 20.8
- 4
- .000000141
- $x - 5$
- 180
- 7,000 cm
- 9%
- 580

Problems of the Week



Visual



If you fold this pattern into a cube, which letter is on the side that is opposite B?

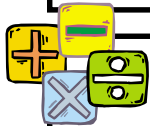


Data/Investigations

A reporter is investigating restaurants. He gathered the following data:

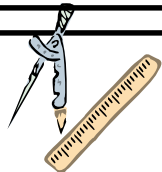
Price of Daily Special	Amount of Time to Wait for Service
\$4	15 minutes
5	10
5	12
6	8
6	10
7	7
8	7
8	6
10	5
12	6
15	7

Display the information on a scatter plot. What do you think the graph means?



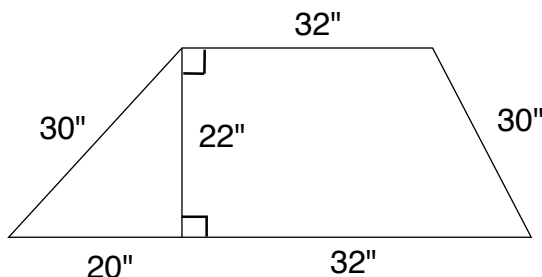
Multi-Step

When 45 people are polled, 32 of them say they like a new restaurant and the others said they did not like it. If this data were to be put in a pie chart, how many degrees would be in the angle that represents people who like the restaurant?



Geometry/Measurement

The formula for the area of a trapezoid is $A = \frac{h}{2}(b_1 + b_2)$; b_1 and b_2 are the parallel sides. Find the area of the trapezoid shown.



Problem-Solving Strategies

Write an Equation

\$1,200 is divided among four sisters so that each gets \$100 more than her next-younger sister. How much will the youngest sister get?

NCTM Middle School Math Magazine Sept/Oct '96



What Do You Say?

To solve the equation:

$4(x - 5) = 3(4 - x) + 7$, what would you do first? Why?

*See answer key. This section should not be duplicated for the students.

1. Solve for x : $\frac{x}{4} = -7$
2. Write 273 in scientific notation.
3. What is the LCM of 6 and 8?
4. Evaluate $4x^3 - x$ if $x = -1$.
5. Solve for L : $\frac{3}{L} = \frac{6}{10}$
6. $4 \cdot 5 - 8 \div 2$
7. Solve for x : $3x + 8 = 20$
8. Write 5,000 in scientific notation.
9. What is 70 percent of 70?
10. $\left(\frac{2}{5}\right)^2$



Keeping Skills Sharp

Write answers here:

1. Two quarts = _____ ounces
2. Draw an acute angle and estimate its measure.
3. $6^2 \cdot 6^3 =$
4. Find the area:
5. How many minutes are in a day?
6. If there were 60 problems on a test and Betty got 90% of the problems correct, how many problems did she answer correctly?
7. Simplify: $2xy(x - 4y)$
8. What is the GCF of 6 and 8?
9. List six multiples of 6.
10. True or false: Perpendicular lines intersect at one point.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Answer Key



Visual

Answer: E

Multi-Step

Answer: 256 degrees.

Geometry/Measurement

Answer: 924 square inches

Data/Investigations

Answers will vary. It appears that the higher the price of the special, the less time it takes to be served. (Negative relationship)

Problem-Solving Strategies

Answer: $x =$ youngest
 $x + 100 =$ next older
 $x + 200 =$ next older
 $x + 300 =$ oldest

$x + x + 100 + x + 200 + x + 300 = 1,200$
Youngest gets \$150.

What Do You Say?

Answers may vary, but a good first step would be to distribute the 4 and the 3 so that it would be possible to combine like terms.

Mental Math

1. -28
2. 2.73×10^2
3. 24
4. -3
5. 5
6. 16
7. $x = 4$
8. 5×10^3
9. 49
10. $\frac{4}{25}$

This section provides an oral drill for sharpening one's mental computation. Before each session give these directions, "Number your paper from 1 to 10. Write your answer as the questions are called out. Each question will be repeated one time only."

Keeping Skills Sharp

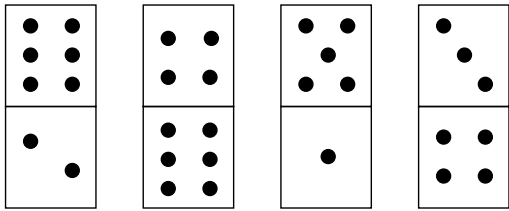
1. 64 oz
2. Answers will vary – less than 90° .
3. 7,776
4. 24 square miles
5. 1,440 minutes
6. 54
7. $2x^2y - 8xy^2$
8. 2
9. Answers will vary. $\{0, 6, 12, 18, 24, \dots\}$
10. True

Problems of the Week

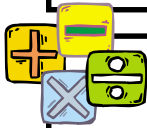


Visual

Four dominoes are shown below.



Arrange the dominoes into a square so that all sides equal the same sum.



Multi-Step

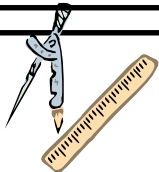
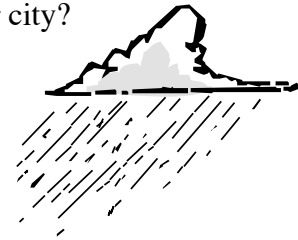
Given any random 3-digit number, what is the probability that a number will be:

- a) a multiple of 5
- b) divisible by 2
- c) a square number



Data/Investigations

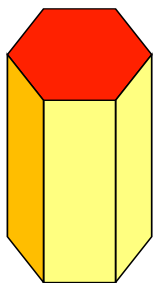
Find the amount of rain the state of North Carolina receives each year. About how much rain falls per month? How does North Carolina's monthly rainfall compare with the monthly rainfall of your city?



Geometry/ Measurement

A figurine is packaged in a box that has a hexagonal base with area of 12 square inches. The box is a prism. Given that the height of the box is five inches, what is the number of cubic inches in its volume?

From 1996-97 Mathcounts School Handbook



Problem-Solving Strategies

Make a Simpler Problem

Unit 5 of a social studies book starts on page 126 and ends on page 241. How many pages are in the unit?

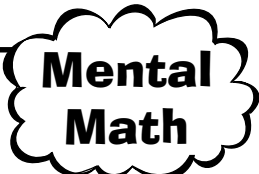


What Do You Say?

In solving the equation,

$$\frac{2}{3}(x - 7) = 18$$

what would you do first? Why?



*See answer key. This section should not be duplicated for the students.

1. Write 3.1×10^4 in standard form.
2. Convert 500 meters to kilometers.
3. Multiply: $3(x + y)$
4. Convert 36 inches to feet.
5. Write 1,120,000 in scientific notation.
6. Solve for y : $x^2 = 64$
7. Which fraction is larger: $\frac{5}{8}$ or $\frac{3}{4}$?
8. How many ounces in $3\frac{1}{2}$ pounds?
9. What is $\frac{3}{4}$ of \$1.00?
10. What is $\frac{3}{4}$ of a dozen?



Keeping Skills Sharp

Write answers here:

- | | |
|--|-----------|
| 1. $(2 \times 10^2)(2 \times 10^3) =$ | 1. _____ |
| 2. Write 6.34×10^3 in standard form. | 2. _____ |
| 3. Solve for x : $\frac{x}{2} + 3 = 10$ | 3. _____ |
| 4. $3x(xy + 2y) =$ | 4. _____ |
| 5. What is a ratio and give an example? | 5. _____ |
| 6. Let $a = 2, b = -3, c = 5$. Find the value of $3b + c$. | 6. _____ |
| 7. A quiz contains 8 questions. You get 7 correct. What percent did you get correct? | 7. _____ |
| 8. $(3xy^2)^2 =$ | 8. _____ |
| 9. Find the mean of the following Fahrenheit temperature readings: $-6^\circ, 4^\circ, 2^\circ, 0^\circ, -7^\circ, 6^\circ, -4^\circ, 2^\circ$. | 9. _____ |
| 10. Write in standard notation:
eighteen thousand and two hundredths. | 10. _____ |

Answer Key



Visual

2	4	6
6		1
4	3	5

12 = sum

Multi-Step

a) $\frac{180}{900}$ b) $\frac{450}{900}$ c) $\frac{22}{900}$

Geometry/Measurement

Answer: 60 in^3

Data/Investigations

Research will need to be done on the rainfall totals for the state and the local area.

Problem-Solving Strategies

Answer: 116 pages

What Do You Say?

Answers may vary, but a good first step would be to multiply both sides of the equation by either 3 or by

$\frac{3}{2}$. This will clear the equation of fractions.

Mental Math

- 31,000
- 0.5 km
- $3x + 3y$
- 3 feet
- 1.12×10^6
- 8, 8
- $\frac{3}{4}$
- 56 oz.
- \$.75
- 9

This section provides an oral drill for sharpening one's mental computation. Before each session give these directions, "Number your paper from 1 to 10. Write your answer as the questions are called out. Each question will be repeated one time only."

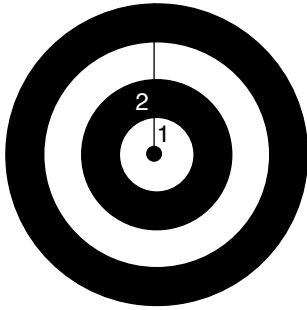
Keeping Skills Sharp

- 4×10^5
- 6,340
- $x = 14$
- $3x^2y + 6xy$
- Answers will be a comparison of two quantities; ex. 3 to 4.
- 4
- $87\frac{1}{2}\%$
- $9x^2y^4$
- 0.375
- 18,000.02

Problems of the Week



Visual

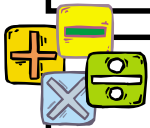


The concentric circles shown have radii of 1, 2, 3, and 4. Express the area of the shaded regions, taken together, in terms of π .



Data/Investigations

At a diving competition, Jan's first dive received 9 scores that averaged 9.0. To calculate her final score for the dive, the highest and lowest scores were removed and the average was taken of the remaining seven scores. If her final score was 9.1, what was the sum of the two removed scores?



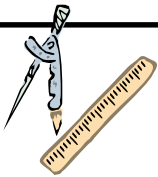
Multi-Step

The lengths of the sides of an $5 \text{ m} \times 5 \text{ m}$ square are increased by 3 m each. The area of the square has been increased by what percent? Express your answer to the nearest whole percent.



Problem-Solving Strategies

Hugo arrives for a basketball game early and watches as the arena fills up. Every 15 minutes he notices about what percentage of the arena is filled. Here is what he saw: (6:00, 2%), (6:15, 5%), (6:30, 10%), (6:45, 17%), (7:00, 26%) If the arena continues filling as shown, about what percent will be full at 7:30? When will the arena be closest to 100% full?



Geometry/Measurement

A rectangular pan has dimensions $8'' \times 4'' \times 2\frac{3}{5}''$. Compute the volume of the pan. Express your answer as a decimal.

From 1997-98 Mathcounts School Handbook



What Do You Say?

A store buys an item for a wholesale price, and marks the price up 25% to get a list price. Then the store has a 25% off sale. If you buy this item, will you be getting it for the wholesale price? More? Less? Explain.

*See answer key. This section should not be duplicated for the students.

1. Solve for m : $\frac{m}{14} = 9$
2. Simplify: $k + 12k + 23$
3. $y^3 \cdot y^3$
4. $-3 \cdot -4 \cdot 5$
5. $|-5|$
6. $10^2 - 4^3$
7. $5 + (-6) \cdot 4 - 2$
8. If $b = -12$, find the value of $b + 6$.
9. Write in standard form: 3.1×10^3
10. If $a = 3$ and $b = 2$, find the value of $a^2 - b^2$.



Keeping Skills Sharp

Write answers here:

- | | |
|--|-----------|
| 1. $\frac{12a^2b^3}{6a^2b}$ | 1. _____ |
| 2. Write in standard form 4.28×10^{-3} . | 2. _____ |
| 3. Write seven tenths as a fraction, decimal, and percent. | 3. _____ |
| 4. $? \cdot \frac{2}{3} = 1$ | 4. _____ |
| 5. $\frac{1}{4} + \frac{1}{3} \cdot \frac{1}{2}$ | 5. _____ |
| 6. Write 2,352 in scientific notation. | 6. _____ |
| 7. 1, 3, 6, 10...
If this pattern continues, what would be the next number in the sequence? | 7. _____ |
| 8. $3\frac{1}{4} \cdot \frac{2}{3}$ | 8. _____ |
| 9. Six students had the following amounts:
35¢, 10¢, 25¢, 20¢, 20¢, 15¢
Find the range, mode, median, mean. Round to the nearest cent. | 9. _____ |
| 10. If $p = 5$ and $s = 12$, find the value of $2s - 3p$. | 10. _____ |

Answer Key



Visual

$$\begin{aligned}\pi(2)^2 - \pi(1)^2 &= \\ 4\pi - \pi &= 3\pi\end{aligned}$$

$$3\pi + 7\pi = 10\pi$$

$$\begin{aligned}\pi(4)^2 - \pi(3)^2 &= \\ 16\pi - 9\pi &= 7\pi\end{aligned}$$

Multi-Step

Answer: 156%

Geometry/Measurement

Answer: 83.2 in^3

Data/Investigations

Answer: 17.3

Problem-Solving Strategies

Answer: The differences are increasing by 2 each time. The arena will be about 50% full at 7:30, and should be closest to 100% full at 8:15.

What Do You Say?

You will pay less than wholesale since the store deducted 25% of a higher price and added 25% of a lower price.

Mental Math

1. $m = 126$
2. $13k + 23$
3. y^6
4. 60
5. 5
6. 36
7. -21
8. -6
9. 3,100
10. 5

This section provides an oral drill for sharpening one's mental computation. Before each session give these directions, "Number your paper from 1 to 10. Write your answer as the questions are called out. Each question will be repeated one time only."

Keeping Skills Sharp

1. $2b^2$
2. .00428
3. $\frac{7}{10}$, .7, 70%
4. $\frac{3}{2}$
5. $\frac{5}{12}$
6. 2.352×10^3
7. 15
8. $\frac{26}{12} = 2\frac{2}{12} = 2\frac{1}{6}$
9. range: 25¢, mode: 20¢, median: 20¢,
mean: $20\frac{5}{6}$ or 21¢
10. 9

Problems of the Week



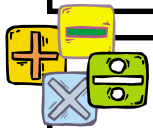
Visual

A bug crawls around a circle with a radius of 3 cm and center point A. Another bug crawls around a circle with radius of 2 cm and a center at point B. If the distance between A and B is 8 cm, what is the shortest distance, in centimeters, that the bugs could be from one another?



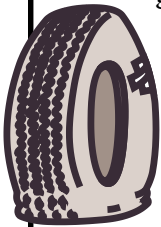
Data/Investigations

Therecorded low temperatures for six consecutive days were -3°C , 4°C , 1°C , -2°C , -4°C and -7°C . Given that the average low for the week was -2°C , what was the low temperature in degrees Celsius on the seventh day?



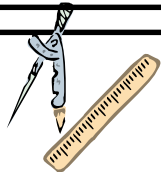
Multi-Step

After 45,000 miles on your car, you had your first set of tires checked and you were told 50% of the tread was gone. You were told to replace the tires when only 20% of the tread remains. Assuming constant wear, what will your mileage be when they need to be replaced?



Problem-Solving Strategies

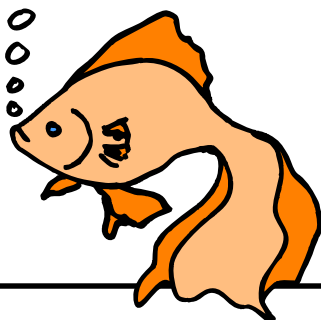
Jane was using cubes to build a model of a pyramid. The base was 10 cubes wide and 10 cubes long. The next layer was 9 cubes wide and 9 cubes long. For each succeeding layer she used 1 cube less for both the length and the width. How many cubes will be needed for the pyramid?



Geometry/Measurement

Ben buys a fish tank that is 44 cm by 40 cm by 31 cm. He wants to put goldfish in the tank, and each fish will need $3,000\text{ cm}^3$ of water. What is the maximum number of goldfish he should put in the tank?

From 1997-98 Mathcounts School Handbook



What Do You Say?

When a rectangle is stretched so that the length and width are 3 times as big as they were before, what happens to the area? Explain.

*See answer key. This section should not be duplicated for the students.

1. $(2 + 1)^3 + (6 - 4)^2$
2. Write 0.68 as a fraction.
3. $1^{14} = \underline{\hspace{2cm}}$
4. If $n = 7$, what is the value of $2n + 5$?
5. Name the next 3 terms:
3, 6, 12, 24, , ,
6. What number is $\frac{1}{10}$ less than 1?
7. If ribbon costs 5¢ per inch, how much will you pay for one yard of ribbon?
8. Write $5\frac{3}{4}$ as a decimal.
9. $9.274 \cdot 10^4$
10. $|-5 + 1|$



Keeping Skills Sharp

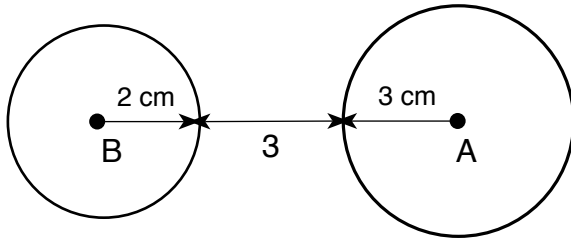
Write answers here:

- | | |
|--|-----------|
| 1. Write 5^3 in expanded form. | 1. _____ |
| 2. Solve for x : $\frac{x}{21} = \frac{.5}{1.5}$ | 2. _____ |
| 3. $\underline{\hspace{1cm}}^2 + \underline{\hspace{1cm}}^2 = 25$ | 3. _____ |
| 4. $0.5 + 0.3 \cdot 0.2 =$ | 4. _____ |
| 5. Estimate 27% as a fraction. Give the actual fraction in simplest form. | 5. _____ |
| 6. Name the factors of 48. | 6. _____ |
| 7. 0, 0.7, 1.4, 2.1... What is the next number in the sequence? | 7. _____ |
| 8. Name the property illustrated by the following:
$5(x + 2) = 5x + 10$ | 8. _____ |
| 9. Write as a decimal and fraction the number that represents 3 pennies as part of a dollar. | 9. _____ |
| 10. Solve for a : $\frac{6}{5} = \frac{a}{17.5}$ | 10. _____ |

Answer Key



Visual



Answer: 3 cm

Multi-Step

Answer: 72,000 miles

Geometry/Measurement

Answer: 18 goldfish

Data/Investigations

Answer: -3°C

Problem-Solving Strategies

Answer: 385 cubes

What Do You Say?

The area is nine times as great as before.

Mental Math

- 31
- $\frac{17}{25}$
- 1
- 19
- 48, 96, 192
- $\frac{9}{10}$
- \$1.80
- 5.75
- 92,740
- 4

Keeping Skills Sharp

- $5 \cdot 5 \cdot 5$
- 7
- 3 and 4 or 4 and 3
- .56
- $\frac{1}{4}, \frac{27}{100}$
- 1, 2, 3, 4, 6, 8, 12, 16, 24, 48
- 2.8
- Distributive Property of Multiplication over Addition
- .03, $\frac{3}{100}$
- 21

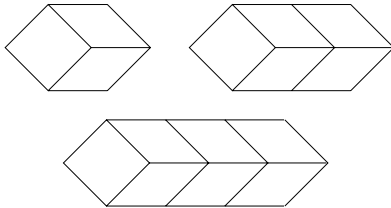
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Problems of the Week



Visual

Some unit cubes are placed side by side to form rectangular prisms. Find the surface area for the first five sets of cubes.



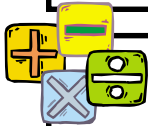
Write an expression for finding the surface area of any such prism from the number of cubes n .



Data/Investigations

Find the rule that will give the second number if you know the first. Then fill in the rest of the table according to the rule.

A	8	3	B	5	20	C	1	D	2	7
	15	10		6	24		2		4	3
	30	25		10	40		3		9	5
	50			8			4			8
	25				100		10			22
		100			60			81		22



Multi-Step

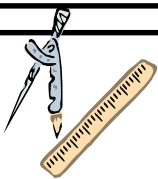
Tammy bought 16 cookies for a party. She had 6 cookies decorated at an extra cost of 25 cents each. If the total cost of the cookies was \$9.50, how much did each plain cookie cost?



Problem-Solving Strategies

Finding A Pattern

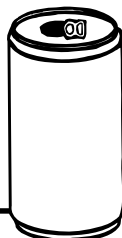
Keisha is conditioning for the track team. On the first day, she ran 5 laps around the track. The second day she ran 6 laps. The third day she ran 8, and on the fourth day she ran 11. To continue this pattern, how many laps should she run on the seventh day? On which day will she reach her goal of 40 laps?



Geometry/Measurement

A right cylindrical soda can with a volume of 354 cm^3 has a radius of 3 cm. Calculate the number of centimeters in the height of the can. Express your answer as a decimal to the nearest tenth.

From 1997-98
Mathcounts School Handbook



What Do You Say?

Explain the difference between prime and composite numbers. Give two examples of each.

*See answer key. This section should not be duplicated for the students.

1. If $c = 5$, find the value of $6c + 4$.
2. Write the expression for four more than x .
3. $1\frac{1}{5} + 2\frac{1}{10}$
4. $-6.4 \div .2$
5. $-13 + 7$
6. $-122 - 16$
7. $-12 \cdot 6$
8. $3 - (-6)$
9. Solve for p : $5 + p = -7$.
10. Solve for n : $\frac{n}{-4} = -5$.



Keeping Skills Sharp

Write answers here:

- | | |
|---|-----------|
| 1. $ -6 $ _____ -3
($\leq, >, =$) | 1. _____ |
| 2. Graph the inequality: $x \geq 8$ | 2. _____ |
| 3. Make a stem and leaf plot for the following set of scores:
64, 88, 71, 68, 82, 87, 75, 91, 89, 83 | 3. _____ |
| 4. What is the value of 4 pennies, 3 nickels, 5 dimes and
7 quarters? | 4. _____ |
| 5. Find the volume of a rectangular pyramid with length 4 m, width
6 m, and height 11 m. | 5. _____ |
| 6. $3\frac{1}{2}$ yards = _____ feet | 6. _____ |
| 7. Which is more, 20 quarts or 6 gallons? | 7. _____ |
| 8. What is the value of $x + y + 5$ if $x = 6$ and $y = 15$? | 8. _____ |
| 9. How many days are in 624 hours? | 9. _____ |
| 10. Estimate by rounding $43.9 \cdot 37.5$. Find the actual answer. | 10. _____ |

Answer Key



Visual

Figure	Surface Area
1	6 square units
2	10 square units
3	14 square units
4	18 square units
5	22 square units

n = number of cubes
 $SA = 4n + 2$

Multi-Step

Answer: 50¢

Geometry/Masurement

Answer: 12.5 cm

Data/Investigations

A	8	3	B	5	20	C	1	1	D	2	7
	15	10		6	24		2	4		3	10
	30	25		10	40		3	9		5	16
	50	45		8	32		4	16		8	25
	25	20		25	100		10	100		22	67
	105	100		15	60		9	81		7	22

Problem-Solving Strategies

Answer: 26; 9th day

What Do You Say?


Prime number has two factors, one and itself.
 Composite number has more than two factors.
 Example: Prime number 2, 3, 5..., composite number 4, 6, 8...

Mental Math

- 34
- $5 + 4$
- $3\frac{3}{10}$
- 32
- 6
- 138
- 72
- 9
- $p = -12$
- $n = 20$

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Keeping Skills Sharp

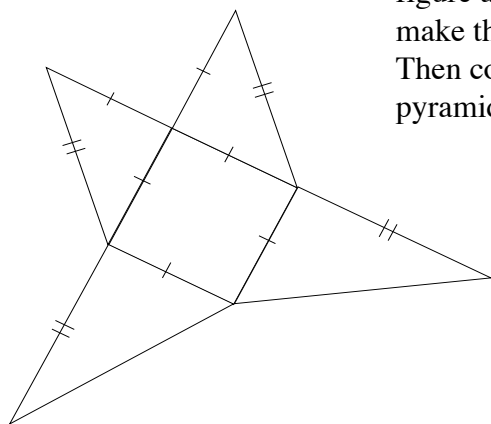
- $|-6| > -3$
- 
- | | |
|---|---------------|
| 6 | 4, 8 |
| 7 | 1, 5 |
| 8 | 2, 3, 7, 8, 9 |
| 9 | 1 |
- \$2.44
- 88 m^3
- $10\frac{1}{2} \text{ ft}$
- 6 gallons
- 26
- 26 days
- 1,600; 1,646.25

Problems of the Week



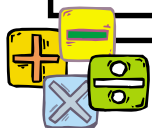
Visual

Make three copies of this figure and fold them to make three pyramids. Then combine the pyramids to make a cube.



Data/Investigations

Of one hundred students surveyed: 55 like basketball, 47 like football, 61 like baseball, 29 like baseball and football, 39 like football and basketball, 42 like basketball and baseball, 27 like all three sports. If a student is chosen at random, what is the probability that he likes no more than one sport?



Multi-Step

A ceramic tile measures 2 inches by 3 inches. What is the *least* number of tiles that are needed to completely cover a square area that is 2 feet on each side?



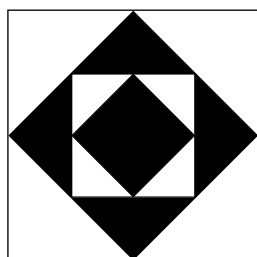
Problem-Solving Strategies

A research team is planning to explore the North Pole. Ten members of the team each have a dog team. There are 56 dogs in all. If there are only 7- and 5-dog teams, how many of each will there be?



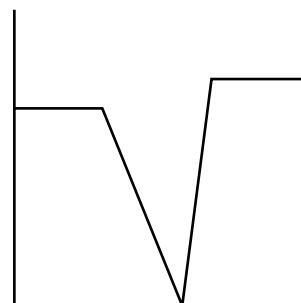
Geometry/Measurement

What is the area of each piece if the whole square measures 20 cm on each side? Explain how you got your answer.



What Do You Say?

Write a scenario for the graph. Be sure to label the axes and use the information in your description.



*See answer key. This section should not be duplicated for the students.

1. $|-5 + (-10)|$
2. $-5\frac{2}{3} + 4\frac{1}{3}$
3. 1.08×10^{-4}
4. $6 \cdot 9 + 3 \cdot 1 + 3$
5. Write $\frac{3}{8}$ as a percent.
6. $0.9 + 1.4$
7. $.2 \times 0.7$
8. Round 9.653 to the nearest hundredth.
9. $240 \text{ kL} = \underline{\hspace{1cm}} \text{ L}$
10. If $w = 10$, find the value of $5w \div 2$.



Keeping Skills Sharp

Write answers here:

- | | |
|---|-----------|
| 1. Express this rate as a unit rate: 24 cards for \$4.80. | 1. _____ |
| 2. Solve the proportion: $\frac{2}{3} = \frac{x}{42}$ | 2. _____ |
| 3. $4.406 \underline{\hspace{1cm}} 4.4060$
($<$, $>$, =) | 3. _____ |
| 4. Find the circumference of a circle with a radius of 10.6 cm. | 4. _____ |
| 5. Find the sales tax on a \$45 sweater if the tax rate is 6%. What is the total price? | 5. _____ |
| 6. With a 6% sales tax, how much tax will be charged on a \$250 purchase? | 6. _____ |
| 7. Joe made 12 out of 30 baskets. What percent of the baskets did he make? | 7. _____ |
| 8. Find the perimeter of a rectangle that is $7\frac{1}{2}$ in. by $4\frac{3}{4}$ in. | 8. _____ |
| 9. What is 43% of \$62? | 9. _____ |
| 10. What is the GCF of 40 and 72? | 10. _____ |

Answer Key



Visual

Multi-Step

Answer: 96 tiles

Geometry/Measurement

400, 200, 100, 50 are the areas of the alternating white and black squares. The white triangles around the smallest black square each have an area of 12.5. The black triangles around the smaller white square each have an area of 25. The largest white triangles have an area of 50.

Data/Investigations

Answer: $\frac{44}{100} = \frac{11}{25}$

Problem-Solving Strategies

Answer: Three 7-dog teams and seven 5-dog teams

What Do You Say?

Answers will vary.

Ex. The graph could represent a car that was traveling at a constant speed, stops quickly, starts again, and accelerates to a higher constant speed. The vertical axis would represent the speed of the car and the horizontal axis would represent clock time.

Mental Math

- 15
- $-1\frac{1}{3}$
- .000108
- 60
- =
- 2.3
- .14
- 9.65
- 240,000
- 25

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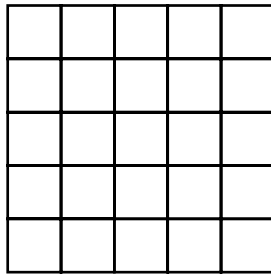
Keeping Skills Sharp

- \$.20 for one
- 28
- $37\frac{1}{2}\%$
- 66.568 cm
- \$2.70, \$47.70
- \$15.00
- 40%
- 24.5 inches
- \$26.66
- 8

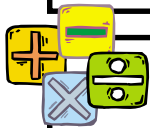
Problems of the Week



Visual



How many squares are in the 5×5 square grid pictured?



Multi-Step

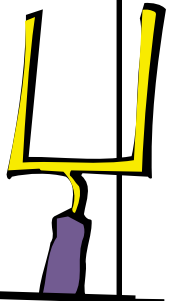
Use Colored Cubes

I have more than 9 but less than 16 cubes. There are half as many red as blue. There are two more green than blue. There is an odd number of yellow. What do I have?



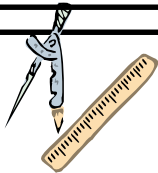
Data/Investigations

In 1991, the separation between goalpost uprights in college football changed from 23 feet 4 inches to 18 feet 6 inches. What percent reduction was this? (round to tenths)



Problem-Solving Strategies

There are 25 red, blue, yellow and green marbles in a bag. If four of the marbles are blue and the probability of selecting a blue or green marble is 40%, how many green marbles are in the bag?



Geometry/Measurement

Assume that the sides of triangles are limited to whole-number measures. How many different triangles have a perimeter of 12? Explain how you determined this.



What Do You Say?

Explain the difference between an expression and an equation.



*See answer key. This section should not be duplicated for the students.

1. Solve for b : $5b = -20$
2. $10 \div (-2) \cdot 3$
3. Write an equation for the following: a number divided by negative five is equal to three.
4. Solve for s : $s + (-4) = 17$
5. Four times what number is 52?
6. 15 is what percent of 60?
7. List four multiples of 4.
8. List the factors of 18.
9. Find the LCM of 4 and 6.
10. $\frac{18}{?} = \frac{6}{7}$



Keeping Skills Sharp

Write answers here:

1. Name the property illustrated by the following: $1(xy) = xy$ 1. _____
2. Estimate the sum: $13.71 + 1.5 + 8.2$ 2. _____
3. The temperature is 5° above 0° . If it drops 8° , what is the temperature after it drops? 3. _____
4. 60 is 75% of what number? 4. _____
5. Find the discount to the nearest cent: \$28 jeans on sale for 20% off. 5. _____
6. $(-8)(2\frac{1}{6}) =$ 6. _____
7. $(-0.73)(-2.5) =$ 7. _____
8. $\frac{3}{5} \cdot 8\frac{2}{5} =$ 8. _____
9. Find the LCM for 12, 18, and 75. 9. _____
10. Find the perimeter and area for the rectangle with length 52 km and width 20 km. 10. _____

Answer Key



Visual

Answer: 55

Multi-Step

Possible answers

Red	Blue	Green	Yellow
1	2	4	7 or 5 or 3
2	4	6	1 or 3

Geometry/Measurement

Two sides of a triangle must have sum larger than the measure of the third side.

1	1	10	X
1	2	9	X
1	3	8	X
.	.	.	.
.	.	.	.
.	.	.	.

Solutions: 3, 4, 5; 2, 5, 5; 4, 4, 4

Data/Investigations

Answer: 20.7%

Problem-Solving Strategies

Answer: 6 green marbles

What Do You Say?

An equation has an equal sign in it.

Mental Math

- −4
- −15
- $\frac{n}{-5} = 3$
- $s = 21$
- 13
- 25%
- Answers will vary. {0, 4, 8, 12, 16, ...}
- {1, 2, 3, 6, 9, 18}
- 12
- 21

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Keeping Skills Sharp

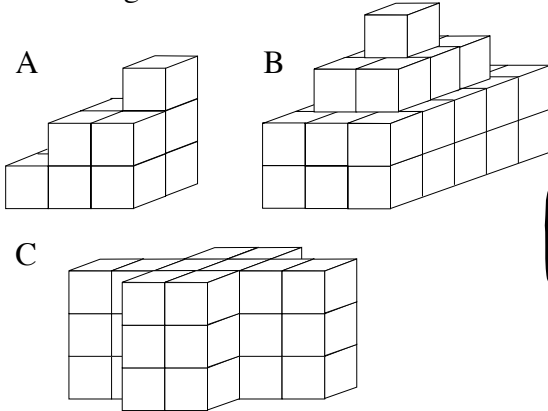
- Identity Property for Multiplication
- 24
- −3
- 80
- \$5.60
- $-17\frac{1}{3}$
- 1.825
- $\frac{126}{25}$ or $5\frac{1}{25}$
- 900
- $P = 144 \text{ k}; A = 1,040 \text{ sq km}$

Problems of the Week



Visual

How many cubes are needed to make each of the following?

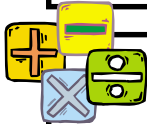


Data/Investigations

Before the first space shots were made, the average summer temperature in Miami Beach was 82.5°F.

Dates	No. of Space Shots	Average July Temp. in Miami
1960-1964	6	82.6°
1965-1968	10	82.7°
1969-1975	12	82.8°

Citizens of Miami were complaining that the space shots were causing a rise in temperature. What do you think of that conclusion?



Multi-Step

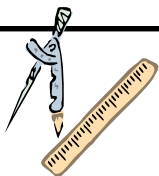
After the first 41 games of the baseball season, the Red Sox have a winning percentage of .586 and the Yankees have .515. How many games behind the Red Sox are the Yankees?



Problem-Solving Strategies

The following data show the number of Chinese citizens who immigrated to the U.S. Use the data to predict how many Chinese immigrated to the U.S. during the 1990s.

Decade	No. of Chinese Immigrants
1950s	10,000
1960s	35,000
1970s	124,000
1980s	389,000



Geometry/Measurement

An architect for the city of Minneapolis is drawing plans for a new city hall. The perimeter of the building in the scaled drawing is 25 inches. If each inch is equal to 10 feet, what is the actual perimeter of the city hall?



What Do You Say?

Explain how you know how many square inches are in a square foot. How can you determine how many square centimeters are in a square meter?

*See answer key. This section should not be duplicated for the students.

1. Express the ratio in simplest form: 15 to 25
2. Write .67 as a fraction.
3. A common multiple of 5, 6, and 9 is _____.
4. A number equivalent to $\frac{34}{10}$ is _____.
5. Solve for w : $5w = 60$.
6. Solve for h : $h + 9 = -16$.
7. 75% of \$2,800.00
8. Solve for a : $a + 21 = 79$.
9. $5^4 =$ ____
10. Simplify: $4p^2 + p + p^2 - 3p$



Keeping Skills Sharp

Write answers here:

- | | |
|--|-----------|
| 1. I'm thinking of a number. If I multiply it by 7 and add 23, the result is 107. What is the number? | 1. _____ |
| 2. Round 12.996 to the nearest tenth, hundredth and whole number. | 2. _____ |
| 3. Solve for r : $r - 3 = 14$. | 3. _____ |
| 4. Compare: 7.9 cm _____ 3 m | 4. _____ |
| 5. Find the next 3 numbers of the sequence:
1, 1, 2, 3, 5, 8, _____, _____, _____ | 5. _____ |
| 6. Find the mean and the median for the following Centigrade temperatures:
25°, 12°, 30°, 32°, and 10°. | 6. _____ |
| 7. Write 18.75484848... as a repeating decimal. | 7. _____ |
| 8. Write 123,000,000,000 in scientific notation. | 8. _____ |
| 9. Find the area of a parallelogram with base of 15 meters and height of 12 meters. | 9. _____ |
| 10. $16 + 10 \div 2 + 3 =$ | 10. _____ |

Answer Key



Visual

- A 11
- B 37
- C 30

Multi-Step

Answer: 3 games

Geometry/Measurement

Answer: 250 feet

Data/Investigations

Will vary, but it would be good to point out that just because two variables are related, it doesn't mean that one causes the other. Also, one might take into consideration what the natural variation of temperatures is. Perhaps such a small rise is not significant.

Problem-Solving Strategies

A good strategy would be to draw a graph or look for a number pattern. In each decade of these data, the number of immigrants increased by 3 to 4 times as much as the previous decade. If this pattern continues, we might expect 1 to 1.5 million immigrants in the 1990s. It would also be a good time to discuss whether or not we can expect all established patterns to continue.

What Do You Say?

144 square inches in a square foot (12 in. \times 12 in.)
10,000 square centimeters in a square meter
(100 cm \times 100 cm)

Mental Math

1. $\frac{3}{5}$ or 3 to 5 or 3 : 5

2. $\frac{67}{100}$

3. 180, 90, 270 are examples.

4. $3\frac{2}{5}$; $\frac{17}{5}$; 3.4

5. 12

6. -25

7. \$2,100.00

8. 58

9. 625

10. $5p^2 - 2p$

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Keeping Skills Sharp

1. 12

2. 13.0, 13.00, 13

3. 17

4. <

5. 13, 21, 34

6. mean: 21.8, median: 25

7. $18.75\overline{48}$

8. 1.23×10^{11}

9. 180 m²

10. 24