Summer Homework Packet

Incoming 7th Grade

Dear Parents/Guardians and Students,

Throughout the summer it is very important to review topics from previous mathematics grade levels. The problems in this packet are designed to help you review and work on skills to be a successful 7th grade math student. This packet will count as a homework grade and these topics will appear on a quiz at the beginning of the marking period (after a review is completed).

The summer homework packet is due Friday, September 6th 2013. In order to receive full credit for the summer homework assignment, all work must be shown (homework does not have to be 100% correct to receive full credit; it needs to be completed to the best of your ability and on time). There are two additional worksheets attached to the packet that are extra credit. These two pages do not have to be completed; however any student that completes them and shows their work will receive extra credit.

Have a wonderful summer!

Miss Wolf

Name _____ Class _____ Date _____

Review 4

Estimating with Decimals

To *round* $76.38 to the nearest dollar:

① Find the rounding place. $7**6**.38

② Look at the digit to the right. $76.**3**8

③ If that digit is less than 5, leave the digit in the rounding place as is. If the digit is 5 or greater, round up.

$76.38 rounds to $76.

You can use rounding to estimate a sum.

$$3.76 + 0.85 + 4.09$$

Round each number to the ones place.

$$3.76 \longrightarrow 4$$
$$0.85 \longrightarrow 1$$
$$4.09 \longrightarrow 4$$

Then add.   9

The sum is about 9.

You can estimate decimal products, quotients, sums, and differences by using *compatible numbers.*

Example 1 Estimate the product 9.47×3.81

$$9.47 \longrightarrow 10$$
$$\times 3.81 \longrightarrow \times 4$$
$$\overline{40}$$

Change to compatible numbers—numbers that are easy to multiply.

The product is about 40.

Example 2 Estimate the quotient $23.96 \div 4.78$.

$$23.96 \div 4.78$$
$$24 \div 4 = 6$$

Change to compatible numbers—numbers that are easy to divide.

The quotient is about 6.

Round each decimal to the nearest hundredth.

1. 1.679 _____   2. 4.981 _____   3. 12.602 _____

4. 32.9744 _____   5. 0.159 _____   6. 2.008 _____

Round each decimal to the nearest tenth.

7. 6.457 _____   8. 15.0886 _____   9. 0.1235 _____

10. 1.036 _____   11. 25.671 _____   12. 6.390 _____

Estimate each sum or difference.

13. $2.98
    + 7.22

14. $5.33
    + 2.91

15. $10.02
    − 6.89

16. $15.84
    + 37.12

Use compatible numbers to estimate.

17. $7.21 \div 3$ 18. $31.74 \div 5$ 19. $522 \div 81$

_____   _____   _____

20. $908 - 445$ 21. $477 + 78$ 22. $73 + 229$

_____   _____   _____

Name _____ Class _____ Date _____

Review 21

A *prime number* has exactly two factors, the number itself and 1.

$$5 \times 1 = 5$$

5 is a prime number.

A *composite number* has more than two factors.

$$1 \times 6 = 6$$
$$2 \times 3 = 6$$

1, 2, 3, and 6 are factors of 6.
6 is a composite number.

The number 1 is neither prime nor composite.

Every composite number can be written as a product of prime numbers.

$$6 = 2 \times 3$$
$$8 = 2 \times 2 \times 2$$
$$12 = 2 \times 2 \times 3$$

Factors that are prime numbers are called *prime factors.* You can use a *factor tree* to find prime factors. This one shows the prime factors of 50.
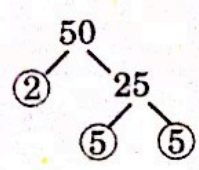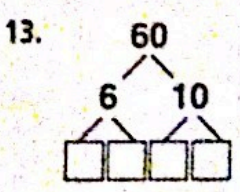
50 = 2 × 5 × 5 is the prime factorization of 50.

Tell whether each number is prime or composite. Explain.

1. 21

2. 43

3. 53

4. 74

5. 54

6. 101

7. 67

8. 138

9. 83

10. 95

11. 41

12. 57

Complete each factor tree.

13. 60
     6 10

14. 64
     8

15. 120
     10
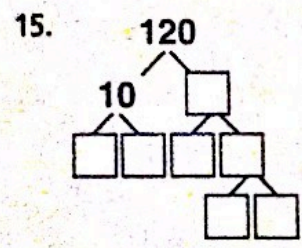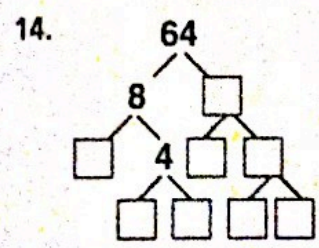
Find the prime factorization of each number.

16. 21

17. 48

18. 81

19. 56

20. 63

21. 100

22. 103

23. 155

Review 23

Equivalent fractions are fractions that name the same amount.

To find equivalent fractions, multiply or divide the numerator and denominator by the same number.

So, $\frac{2}{5} = \frac{4}{10}$.

To write a fraction in *simplest form*, divide the numerator and denominator by their greatest common factor.

Example: Write $\frac{8}{12}$ in simplest form.

① Find the greatest common factor.

8: 1, 2, **4**, 8
12: 1, 2, 3, **4**, 6, 12

The GCF is 4.

② Divide the numerator and denominator by the GCF.

$\frac{8}{12}$ in simplest form is $\frac{2}{3}$.

Write two fractions equivalent to each fraction.

1. $\frac{5}{6}$ _____

2. $\frac{3}{7}$ _____

3. $\frac{7}{8}$ _____

4. $\frac{3}{11}$ _____

5. $\frac{3}{6}$ _____

6. $\frac{1}{5}$ _____

State whether each fraction is in simplest form. If it is not, write it in simplest form.

7. $\frac{12}{15}$ _____

8. $\frac{8}{15}$ _____

9. $\frac{9}{21}$ _____

10. $\frac{15}{22}$ _____

11. $\frac{14}{30}$ _____

12. $\frac{25}{70}$ _____

Write each fraction in simplest form.

13. $\frac{12}{24}$ _____

14. $\frac{10}{200}$ _____

15. $\frac{56}{64}$ _____

16. $\frac{3}{9}$ _____

17. $\frac{130}{170}$ _____

18. $\frac{12}{16}$ _____

19. $\frac{7}{49}$ _____

20. $\frac{22}{33}$ _____

21. $\frac{30}{225}$ _____

22. There are 420 girls out of 1,980 people attending a state fair. In simplest form, what fraction of the people attending are girls?

_____

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Review 31

To add or subtract fractions with unlike denominators, you can use equivalent fractions.

Find $\frac{5}{6} + \frac{1}{2}$.

① Find the least common denominator of 6 and 2.

   The LCD is 6.

② Write equivalent fractions using the LCD.

   $\frac{5}{6} = \frac{5}{6}$ $\frac{1}{2} = \frac{1 \times 3}{2 \times 3} = \frac{3}{6}$

③ Add. Write the sum in simplest form.

   $\frac{5}{6} + \frac{1}{2} = \frac{5}{6} + \frac{3}{6}$

   $= \frac{5 + 3}{6}$

   $= \frac{8}{6}$

   $= \frac{4}{3}$

   $= 1\frac{1}{3}$

   $\frac{5}{6} + \frac{1}{2} = 1\frac{1}{3}$

Find $\frac{4}{5} - \frac{1}{3}$.

① Find the least common denominator of 5 and 3.

   The LCD is 15.

② Write equivalent fractions using the LCD.

   $\frac{4}{5} = \frac{4 \times 3}{5 \times 3} = \frac{12}{15}$ $\frac{1}{3} = \frac{1 \times 5}{3 \times 5} = \frac{5}{15}$

③ Subtract. Write the difference in simplest form.

   $\frac{4}{5} - \frac{1}{3} = \frac{12}{15} - \frac{5}{15}$

   $= \frac{12 - 5}{15}$

   $= \frac{7}{15}$

   $\frac{4}{5} - \frac{1}{3} = \frac{7}{15}$

Find each sum or difference.

1. $\frac{1}{2} + \frac{3}{4}$ _____

2. $\frac{11}{16} - \frac{5}{16}$ _____

3. $\frac{1}{6} + \frac{1}{3}$ _____

4. $\frac{7}{8} - \frac{1}{2}$ _____

5. $\frac{9}{10} + \frac{1}{2}$ _____

6. $\frac{2}{3} + \frac{5}{9}$ _____

7. $\frac{1}{2} + \frac{7}{10}$ _____

8. $\frac{3}{4} - \frac{5}{12}$ _____

9. $\frac{5}{8} + \frac{1}{4}$ _____

10. $\frac{15}{16} - \frac{1}{4}$ _____

11. $\frac{7}{12} - \frac{1}{3}$ _____

12. $\frac{5}{6} + \frac{1}{3}$ _____

13. $\frac{7}{8} - \frac{1}{4}$ _____

14. $\frac{3}{5} + \frac{1}{6}$ _____

15. $\frac{1}{12} + \frac{1}{10}$ _____

16. $\frac{7}{8} - \frac{3}{10}$ _____

17. $\frac{2}{6} + \frac{3}{4}$ _____

18. $\frac{3}{8} - \frac{1}{3}$ _____

19. $\frac{5}{8} + \frac{2}{3}$ _____

20. $\frac{3}{5} - \frac{1}{2}$ _____

21. $\frac{1}{8} + \frac{1}{3}$ _____

22. $\frac{7}{10} - \frac{3}{5}$ _____

23. $\frac{9}{10} - \frac{1}{2}$ _____

24. $\frac{1}{10} + \frac{4}{5}$ _____

Review 54

Mean, Median, and Mode

- The *mean* of a set of data is the sum of the values divided by the number of data items.

    $74 + 77 + 80 + 81 + 85 + 87 + 94 + 94 = 672$
    $672 \div 8 = 84$

    The mean math test grade is 84.

- The *median* of a data set is the middle value when the data are arranged in numerical order. When the grades are arranged in order from least to greatest, there are two middle numbers.

    74, 77, 80, 81, 85, 87, 94, 94

    To find the median, add the two middle numbers and divide the total by 2.

    $81 + 85 = 166$
    $166 \div 2 = 83$

    The median grade is 83.

- The *mode* of a data set is the item in the data set that appears most often. For this data, 94 is the mode.

Math Test Grades	
Sharon	81
Rashid	94
Durrin	77
Nicole	80
Terry	74
Mei-lin	94
Kevin	87
Carlos	85

Find the mean of each data set.

1. 8, 6, 5, 9, 7, 13

2. 12, 10, 16, 14, 8, 24

3. 9, 12, 14, 6, 8, 5

4. 104, 126, 128, 100, 97

5. 86, 68, 70, 48, 66, 76

6. 65, 50, 95, 35, 75, 100

Find the median of each data set.

7. 5, 4, 7, 9, 8

8. 12, 16, 19, 14, 14, 18

9. 9, 19, 21, 13

10. 46, 38, 22, 48, 61

11. 60, 57, 53, 78, 44, 51

12. 8, 6, 6, 5, 8, 9

Find the mode of each data set.

13. 3, 4, 5, 5, 3, 5, 4, 2

14. 1, 2, 1, 1, 2, 2, 3, 1

15. 6, 8, 3, 8, 3, 9, 3

16. 33, 35, 34, 33, 35, 33

17. 98, 97, 98, 98, 97

18. 110, 121, 121, 110, 115, 117, 119

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Review 62

Each *point F, G,* and *H,* indicates an exact location in space.
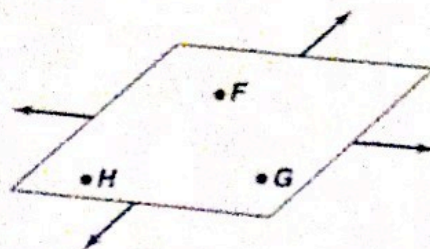
Plane *FGH* is flat and extends indefinitely as suggested by the arrows.

Line KM ($\overleftrightarrow{KM}$) is a series of points that extends in two opposite directions without end.
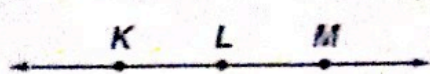
Segment LM ($\overline{LM}$) is part of $\overleftrightarrow{KM}$. The points *L* and *M* are endpoints of $\overline{LM}$.

Ray LM ($\overrightarrow{LM}$) is part of a line. Point *L* is its only endpoint.

$\overleftrightarrow{ST}$ and $\overleftrightarrow{UV}$ are *parallel lines.* They are in the same plane but do not intersect. They have no points in common.
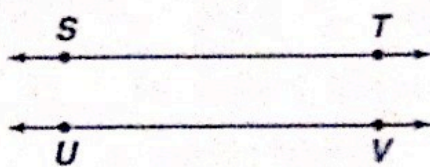
Points on the same line are *collinear.* Points *S* and *T* are collinear.

Skew lines are neither parallel nor intersecting.

Read each statement. Write *true* or *false*.

1. A line has two endpoints.

2. A plane has only two points.

3. A segment is part of a line.

4. A plane is flat.

5. Collinear points lie on different lines.

6. A ray has two endpoints.

7. A ray has no beginning or end.

8. A plane contains only one line.

9. Parallel segments do not intersect.

10. Skew lines intersect.

Match each figure with its name.

11. _____   12. _____

13. _____   14. _____

a. ray
b. plane
c. line
d. segment

Review 65

Triangles can be classified by the measures of their angles.
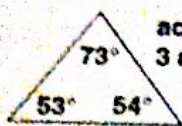
acute
73° 3 acute angles
53° 54°
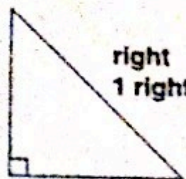
right
1 right angle
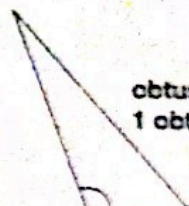
obtuse
1 obtuse angle
110°

Triangles can be classified by the number of congruent sides.
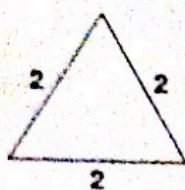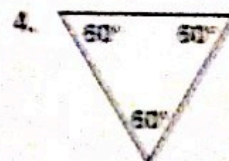
equilateral
all congruent
sides
2 2
2
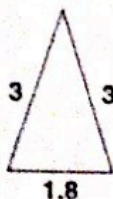
isosceles
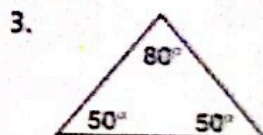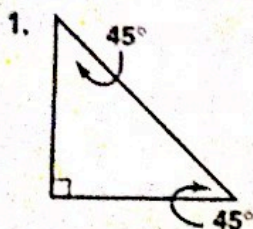2 congruent
sides
3 3
1.8
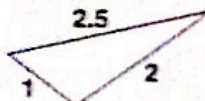
scalene
no congruent
sides
2.5
1 2

Classify each triangle as *acute*, *right*, or *obtuse*.

1. 45°
45°

2. 105°
35° 40°

3. 80°
50° 50°

4. 60° 60°
60°

_____ _____ _____ _____
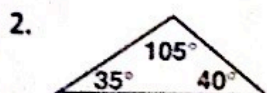
Classify each triangle by its angles.

5. 90°, 40°, 50°   6. 38°, 72°, 70°   7. 115°, 30°, 35°   8. 70°, 60°, 50°

_____ _____ _____ _____

Classify each triangle by its sides.

9. 9
7 3

10. 5 5
3

11. 6 6
6

12. 4
7 7

_____ _____ _____ _____
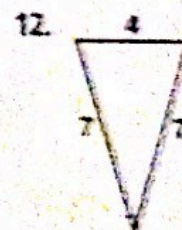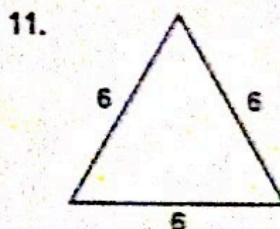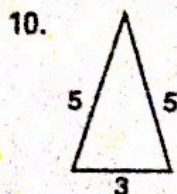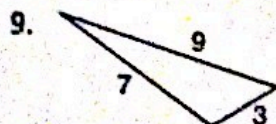
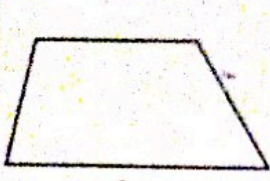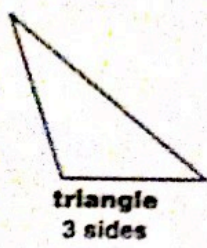## Review 66

Exploring and Classifying Polygons

A *polygon* is a closed figure formed by three or more line segments that do not cross.

polygon

not closed

not a line segment

segments cross
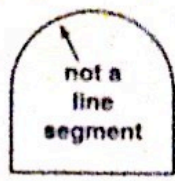
not polygons

Polygons can be named according to the number of sides.

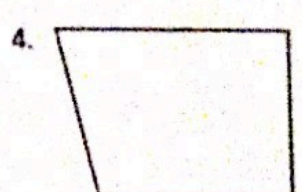| triangle | quadrilateral | pentagon | hexagon | octagon | decagon |
| 3 sides | 4 sides | 5 sides | 6 sides | 8 sides | 10 sides |

Write all the possible names for each quadrilateral. Choose from
parallelogram, rhombus, square, and *trapezoid.*
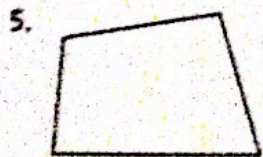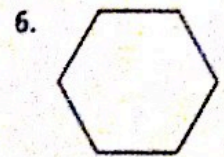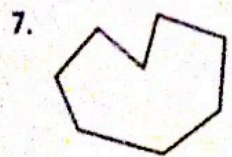
1.

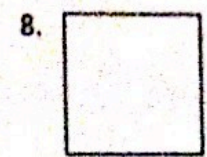

_____
_____

2.

_____
_____

3.

_____
_____
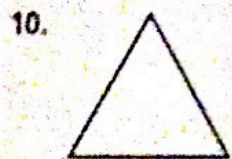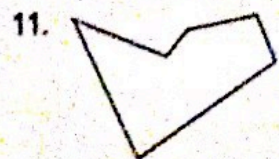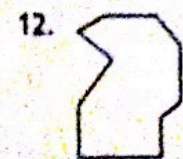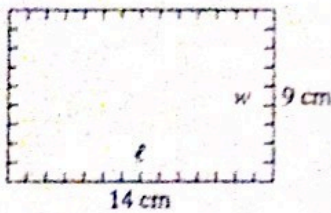
4.

_____
_____
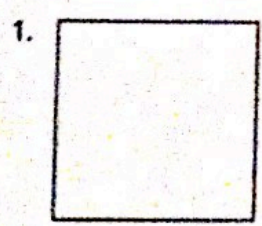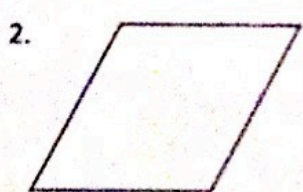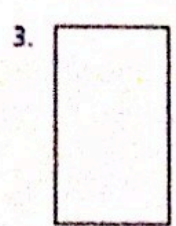
Identify each polygon according to the number of sides.

5.

_____

6.

_____

7.

_____

8.

_____

9.

_____

10.

_____

11.

_____

12.

_____

Review 73

Perimeter

The *perimeter* of a figure is the sum of the lengths of its sides. Opposite sides of a rectangle are equal. To find the perimeter, add the 2 lengths (ℓ) and the 2 widths (w).

$$P = \ell + \ell + w + w \text{ or } P = 2\ell + 2w$$

Find the perimeter.

$w \ \ 9\text{ cm}$
ℓ
14 cm

$$
\begin{aligned}
P &= 2\ell + 2w \\
&= 2(14) + 2(9) \\
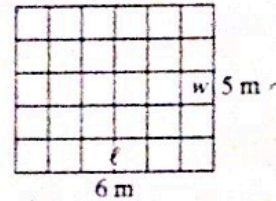&= 28 + 18 = 46
\end{aligned}
$$

The perimeter is 46 centimeters.

Area

The *area* of a figure is the number of square units needed to cover the figure. To find the area of a rectangle, multiply the length (ℓ) and the width (w).
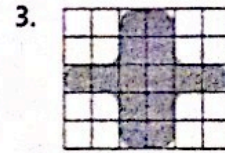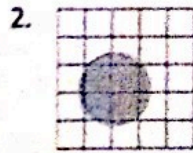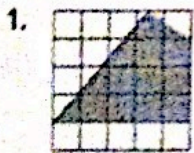
$$A = \ell \times w$$

Find the area.

$w \ 5\text{ m}$
ℓ
6 m

$$
\begin{aligned}
A &= \ell \times w \\
&= 6 \times 5 \\
&= 30
\end{aligned}
$$

The area is 30 square meters.

Estimate the area of each figure. Each square represents 1 square inch.

1. _____

2. _____

3. _____

Find the perimeter and area of each rectangle or square.

4. $\ell = 12$ cm, $w = 2$ cm

5. $\ell = 9$ ft, $w = 7.5$ ft

6. $\ell = 2.5$ m, $w = 2.5$ m

_____

7. $\ell = 5.5$ in., $w = 5.5$ in.

8. $\ell = 6.2$ in., $w = 3.4$ in.

9. $\ell = 4.5$ ft, $w = 0.75$ ft

_____

10. $\ell = 8$ cm, $w = 8$ cm

11. $\ell = 10.5$ m, $w = 5.2$ m

12. $\ell = 22$ in., $w = 9$ in.

_____

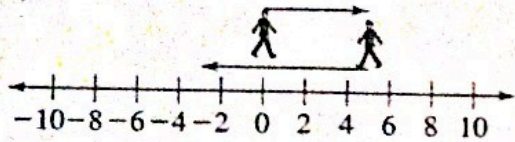13. What is the area of a square with a perimeter of 60 meters?

_____

Review 83

To subtract an integer, add the opposite.
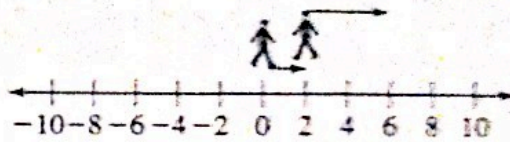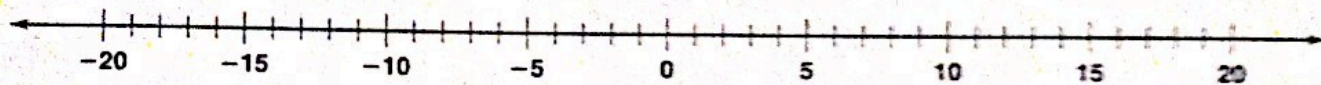
Example 1: Subtract $5 - 8$.

Add the opposite: $5 + (-8)$

$5 - 8 = -3$

Example 2: Subtract $2 - (-4)$.

Add the opposite: $2 + 4$

$2 - (-4) = 6$

Use a number line. Find each difference.

1. $3 - (-6)$ _____
2. $2 - (-4)$ _____
3. $-1 - 2$ _____
4. $-3 - (-5)$ _____
5. $-8 - (-3)$ _____
6. $4 - (-4)$ _____
7. $-8 - 2$ _____
8. $8 - (-2)$ _____
9. $-8 - (-2)$ _____
10. $-7 - 4$ _____
11. $-10 - 2$ _____
12. $-5 - (-5)$ _____
13. $-5 - 6$ _____
14. $9 - (-3)$ _____
15. $-11 - (-6)$ _____

Find each difference.

16. $15 - (-4)$ _____
17. $-12 - 3$ _____
18. $21 - (-7)$ _____
19. $3 - (-12)$ _____
20. $-2 - 10$ _____
21. $-13 - 13$ _____
22. $5 - (-5)$ _____
23. $18 - (-10)$ _____
24. $-7 - (-13)$ _____
25. $14 - 16$ _____
26. $3 - 15$ _____
27. $-6 - (-9)$ _____
28. $-12 - 6$ _____
29. $15 - (-9)$ _____
30. $7 - 19$ _____

Solve each equation.

31. $12 + s = -10$ _____
32. $x - 8 = -3$ _____
33. $b + 18 = 12$ _____
34. $x - 21 = -2$ _____
35. $s - 25 = -100$ _____
36. $y + 5 = 9$ _____
37. $-5 + c = -10$ _____
38. $x + 30 = 5$ _____
39. $15 + b = 10$ _____

Review 90

Probability

The *probability of an event* is a number that describes how likely it is that the event will occur. When the outcomes are equally likely, the probability of an event is the following ratio.

$$P(\text{event}) = \frac{\text{number of favorable outcomes}}{\text{total number of outcomes}}$$

Find the probability of choosing the red chip if the chips are placed in a bag and mixed.

(Red) (Blue) (Blue) (Blue) (Blue)

$$P(\text{red}) = \frac{\text{number of favorable outcomes}}{\text{total number of outcomes}} = \frac{1}{5}$$

The probability of choosing the red chip is $\frac{1}{5}$.

- If an event is impossible, its probability is 0. The probability of drawing an 11 from cards numbered 1 to 10 is impossible.

- If an event is unlikely, equally likely, or likely, its probability is between 0 and 1. The probability that you will draw a 2 or a 4 from cards numbered 1 to 10 is likely.

- If an event is certain, its probability is 1. The probability that you will draw a card from 1 to 10 from a set of cards numbered 1 to 10 is certain.

Find the probability of each event.

1. You pick a vowel from the letters in EVENT. _____

2. You pick a weekend day from days of the week. _____

3. You pick a month that begins with the letter J. _____

4. A spinner is labeled 1–6. You spin 1 or 5. _____

5. You pick an odd number from 75 to 100. _____

6. You pick a word with four letters from this sentence. _____

7. You have a birthday on February 30. _____

8. A number cube is tossed. You toss a 1, 3, or 5. _____

Each of the 26 letters in the English alphabet is put on a slip of paper. One slip is selected at random. Classify each event as *impossible, unlikely, likely,* or *certain.*
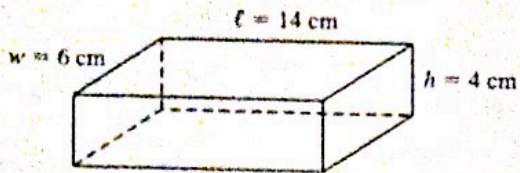
9. $P(\text{consonant})$

10. $P(\text{a letter from A to Z})$

11. $P(\text{vowel})$

_____

_____

_____

12. $P(B)$

13. $P(10)$

14. $P(*)$

_____

_____

_____

Review 78

Exploring Surface Area

The *surface area* of a rectangular prism is the sum of the areas of the faces. You can use nets to find surface area.

Find the surface area of the prism.

$\ell = 14$ cm
$w = 6$ cm
$h = 4$ cm

area of top = area of bottom
area of front = area of back
area of right side = area of left side

① Find the area of the top.
$A = \ell \times w$
$= 14 \times 6$
$= 84$ cm^2

② Find the area of the front.
$A = \ell \times h$
$= 14 \times 4$
$= 56$ cm^2

③ Find the area of the right side.
$A = w \times h$
$= 6 \times 4$
$= 24$ cm^2

④ Add.
$84 + 84 + 56 + 56 + 24 + 24 = 328$
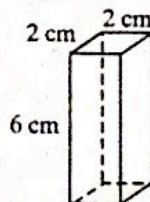
The surface area of the prism is 328 square centimeters.

14 cm
6 cm
6 cm
4 cm
4 cm
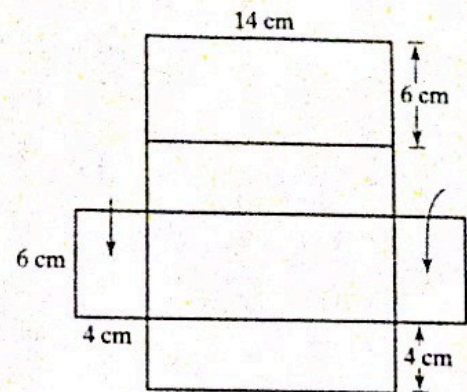
Find the surface area of each prism.

1.
4 m
4 m
4 m

2.
2 cm
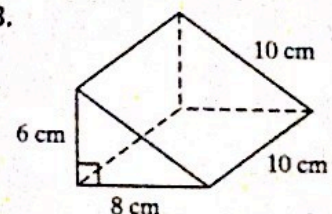2 cm
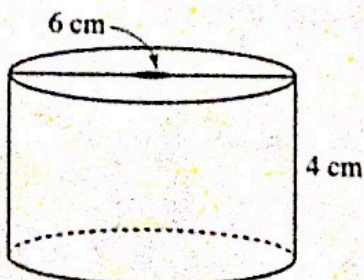6 cm

3.
10 cm
6 cm
10 cm
8 cm

_____   _____   _____
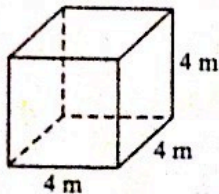
Find the surface area of each cylinder. (*Hint:* The net of a cylinder is two circles and a rectangle.)

4.
6 cm
4 cm

5.
4 cm
4 cm
4 cm

_____   _____

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