G5 Basic

G6 Advanced

Helping With Math

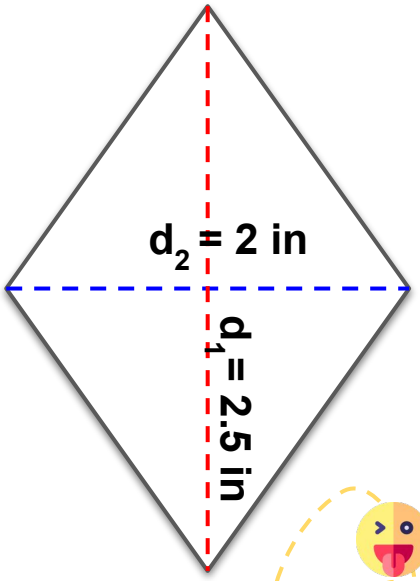
USA GRADES

Area of a Rhombus

Suitable for students **aged 9-11**

This pack is suitable for learners aged 9-11 years old or 5th to 6th grades (USA). The content covers fact files and relevant basic and advanced activities involving the area of a rhombus.

A **rhombus** is a quadrilateral with four sides of equal measurements that form obtuse and acute angles.



The **area of a rhombus** is the amount of space that the flat surface of a rhombus shape occupies. It is half the product of its diagonals.

Area of a Rhombus

$\frac{1}{2} (d_1 \times d_2)$

Example:

$diagonal_1 = 2.5\ in$

$diagonal_2 = 2\ in$

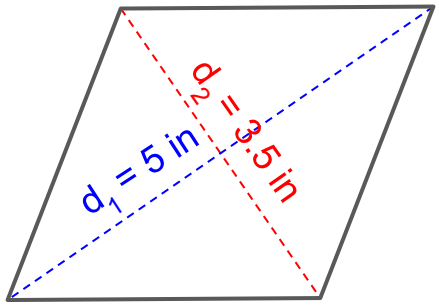
- $\frac{1}{2}$ (2.5 in x 2 in)
- $\frac{1}{2}$ (5 in)

Area = 2.5 in^2

April Fool's Day *is an annual celebration every* ***first of April.*** *It is a day that people play practical jokes or pranks with each other where one would usually shout "April Fools!" afterward. The exact origins of this celebration are unknown.*

AREA OF A RHOMBUS

A rhombus is a quadrilateral that has properties similar to other quadrilaterals. It has parallel sides like a parallelogram and perpendicular sides like a kite. Therefore, calculating for the area of a rhombus can be the same as these other polygons.

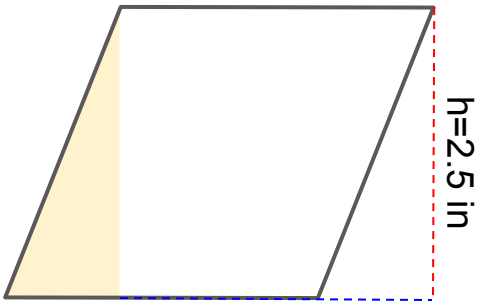


diagonal $_1$ (d_1) = 5 inches
diagonal $_2$ (d_2) = 3.5 inches

Since the diagonals of a rhombus are perpendicular to each other, we may use the same formula of a kite to calculate the area of a rhombus.

Formula: ½ (d_1 x d_2)

- ½ (5 in x 3.5 in)
- ½ (17.5 in^2)
- **Area = 8.75 in^2**



Base = 3.5 inches
Height = 2.5 inches

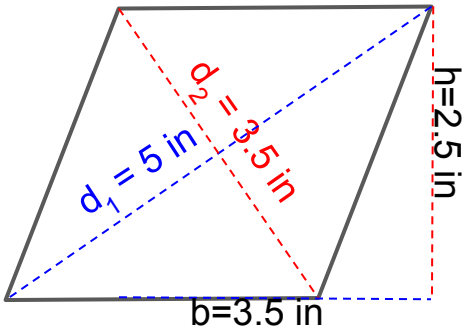
A rhombus has parallel sides and is, therefore, also a parallelogram. If given the base and height of the rhombus, we can also calculate for the area.

Formula: base x height

- 3.5 in x 2.5 in
- **Area = 8.75 in^2**

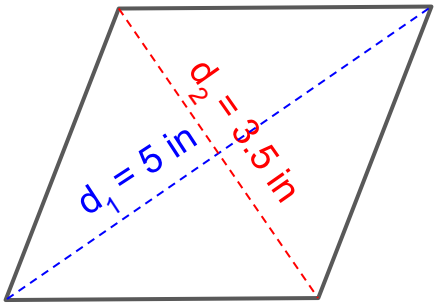
CALCULATING THE AREA OF A RHOMBUS

1. Check for the measurements of the rhombus. We may use the measurement of its diagonals or the base and height. Make sure that all measurements are of the same units.



2. Depending on the measurements that you are using, replace the formula with the corresponding measurements.

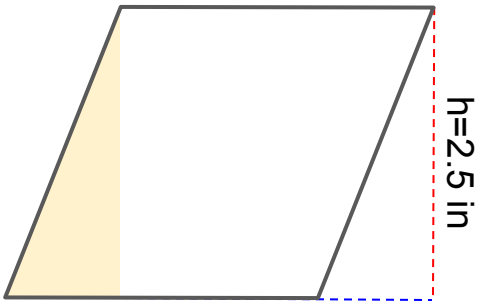
Using measurement of diagonals: ½ (d_1 x d_2)



diagonal $_1$ (d_1) = 5 inches
diagonal $_2$ (d_2) = 3.5 inches

- ½ (5 in x 3.5 in)
- ½ (17.5 in^2)
- **Area = 8.75 in^2**

Using measurement of base and height: base x height



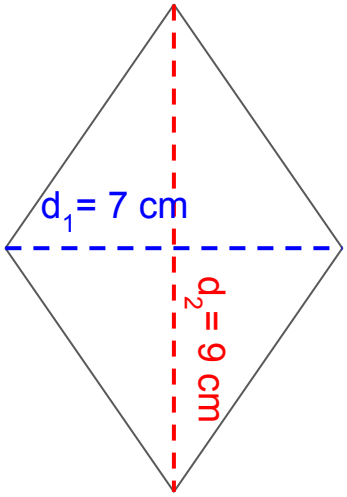
Base = 3.5 inches
Height = 2.5 inches

- 3.5 in x 2.5 in
- **Area = 8.75 in^2**

FINDING THE AREA EXERCISES

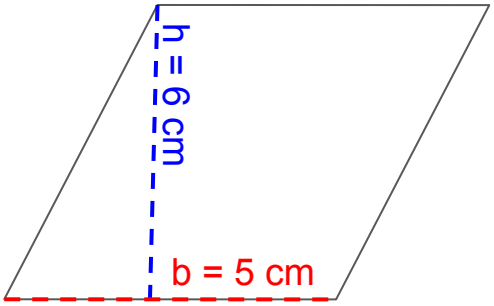
Compute for the area of the below rhombuses:

1.



Solution:

2.



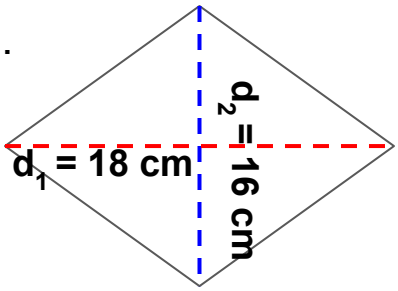
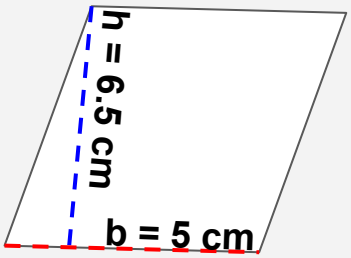
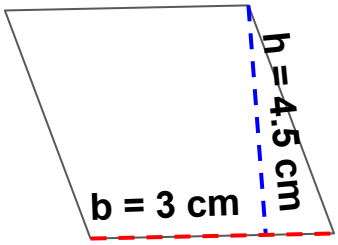
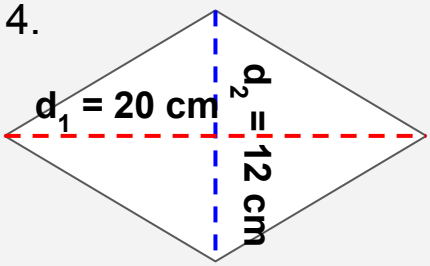
Solution:

TABLE OF ACTIVITIES

SWITCHING CALENDARS

G5 Basic

The origins of *April Fool's Day* are unknown. Some historians believe that it had to do with the switching from the Julian to the Gregorian Calendar. People who were not aware of this change were called "April Fools". Don't be a fool! Connect the rhombuses under the Julian Calendar to their corresponding area under the Gregorian Calendar.

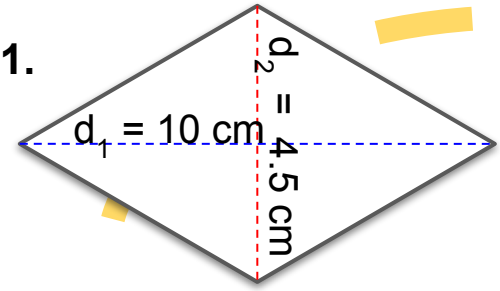
Julian Calendar	*Gregorian Calendar*
1. 	32.5 cm^2
2. 	120 cm^2
3. 	144 cm^2
4. 	13.5 cm^2

HUNTIGOWK DAY

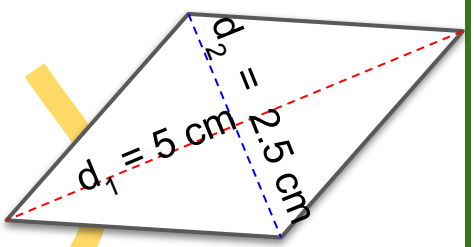
G5 Basic

In Scotland, April Fool's Day is called *Huntigowk Day* which means *hunt the cuckoo*. The prank is to have someone deliver a message to ask for help but the letter contains a sentence that signifies it's a joke and that the letter has to be passed on until the messenger realizes that is a prank. Pass on the letter and calculate the area of the rhombus in each number. Place your answer in the box provided.

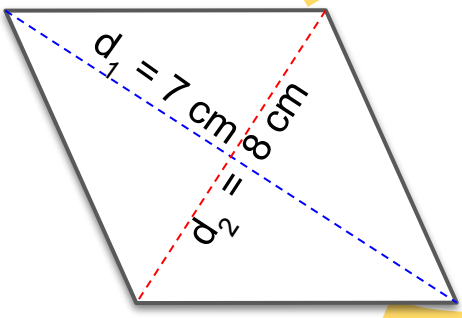
1.



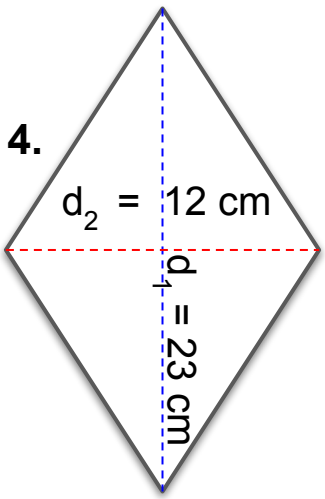
2.



3.



4.



"Dinna laugh, dinna smile. Hunt the gowk another mile"

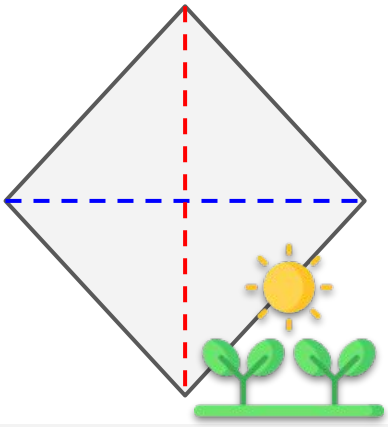
WELCOME SPRING EQUINOX

G5
Basic

Another theory about the origins of April Fool's Day is the spring equinox and its unpredictable weather. It feels like Mother Nature is playing tricks on us. Answer the word problems and show your solutions.

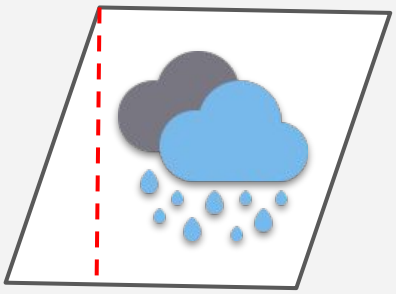
1. The area of the rhombus is 150 m^2. The measurement of diagonal$_1$ is 12 m. What is the measurement of diagonal$_2$?

   Solution:



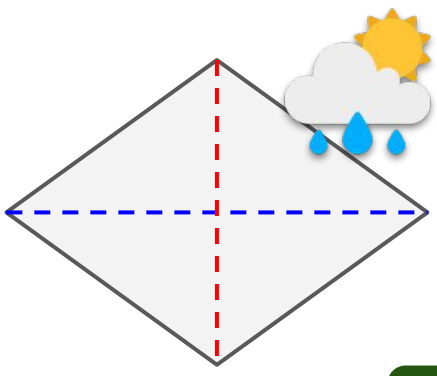
2. The height of the rhombus is 32 cm and the area is 480 cm^2. What is the measurement of the base?

   Solution:



3. The measurement of the diagonals of a rhombus is 15 ft. and 38 ft. What is the area of this rhombus?

   Solution:



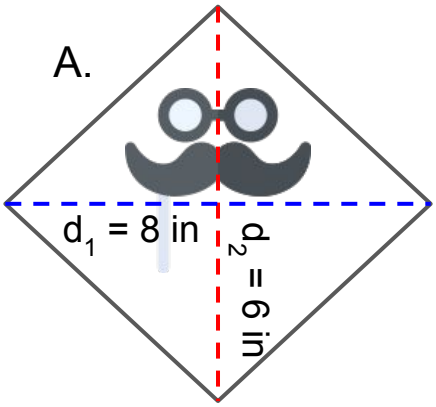
HILARIA

G5 Basic

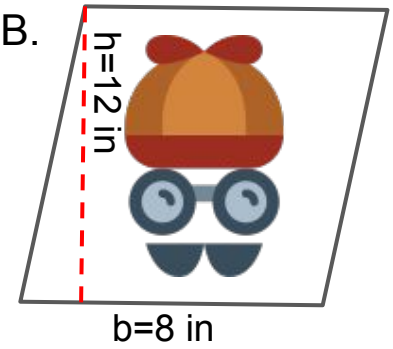
A festival in ancient Rome may also have influenced April Fool's Day. *Hilaria* is a celebration where people are dressed in disguises to mock people. Write down the letter of the disguise that corresponds to the area of each number on the space provided.

Person	1	2	3	4	5
					
Area	352 in^2	480 in^2	24 in^2	960 in^2	96 in^2
Answer					

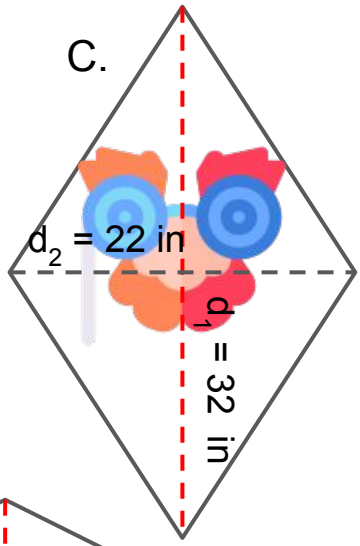
A.



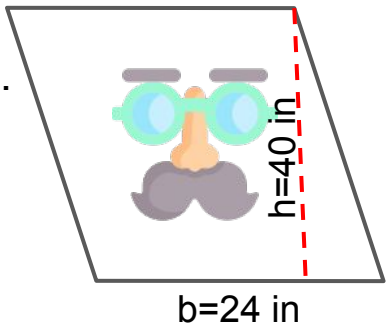
B.



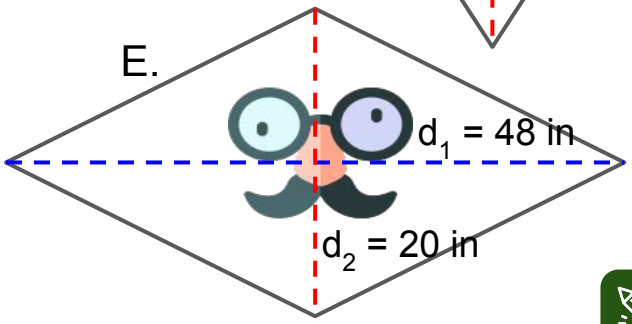
C.



D.



E.



APRIL FOOLS!

G5 Basic

Don't let yourself be fooled on April Fool's Day! Calculate for the area of the rhombus based on the measurements given. Match the area to letters in the grid below and unscramble the letters to find out the secret word.

1. $diagonal_1$ = 8 m, $diagonal_2$ = 6 m — Solution:

2. base = 15 m, height = 12 m — Solution:

3. $diagonal_1$ = 73 m, $diagonal_2$ = 64 m — Solution:

4. base = 21 m, height = 12 m — Solution:

5. $diagonal_1$ = 54 m, $diagonal_2$ = 45 m — Solution:

6. base = 105 m, height = 80 m — Solution:

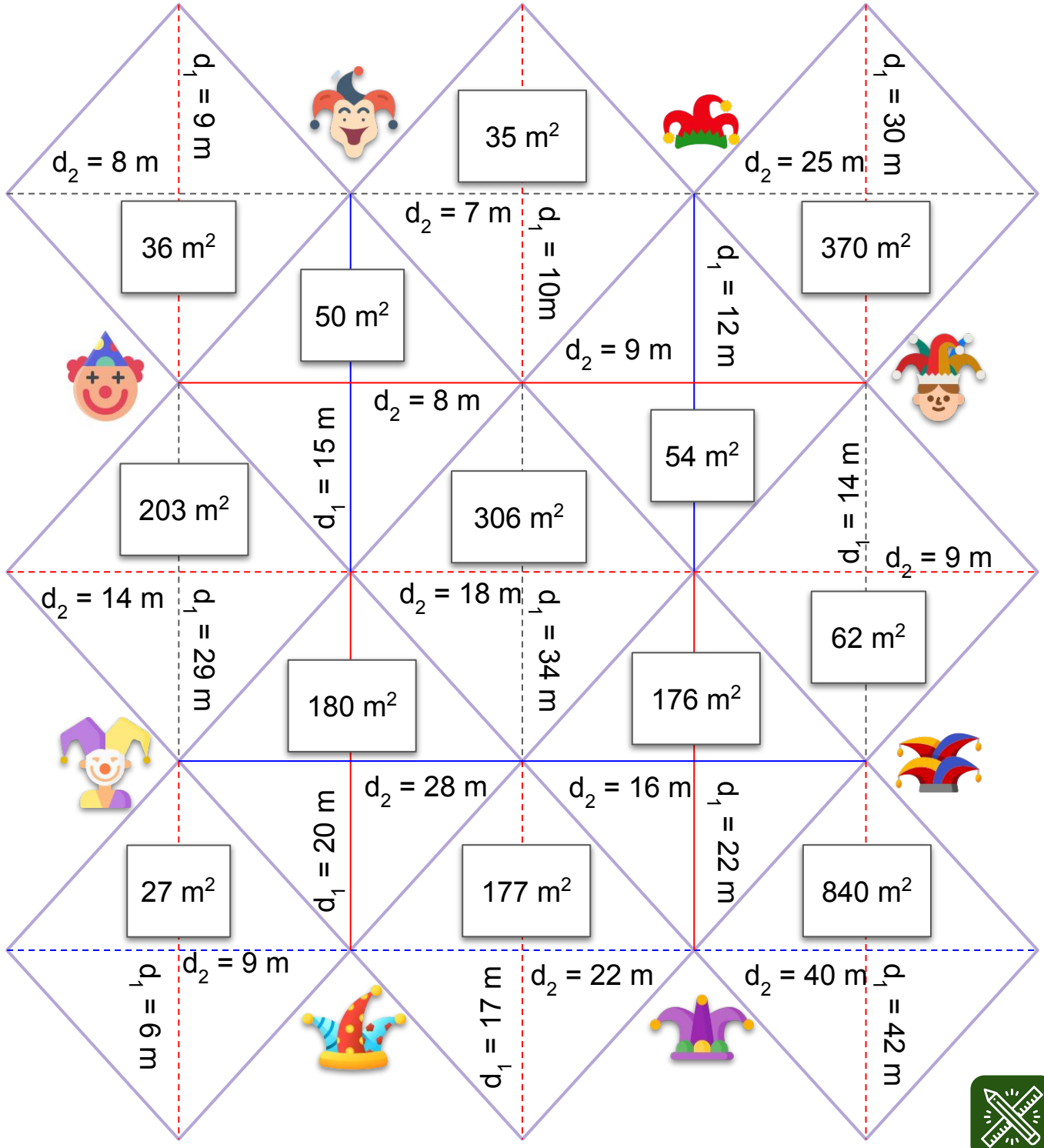
		What is the secret word?			

X 8000 m^2	**H** 180 m^2	**A** 8400 m^2	**O** 24 m^2	**T** 252 m^2	**N** 160 m^2
C 2336 m^2	**G** 1215 m^2	**F** 22 m^2	**K** 2222m^2	**R** 250 m^2	**P** 20 m^2

THE PRACTICAL JOKER

G6 Advanced

Find the practical joker among the rhombuses. Color the rhombus that contains the incorrect area. Use as many colors as you can.



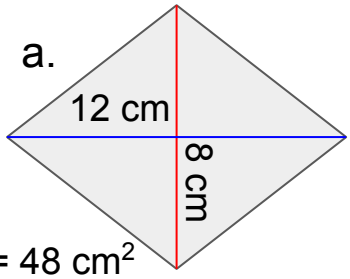
WHICH ONE IS THE PRANK?

G6 Advanced

Figure out which one is a prank! Encircle the letter of the rhombus with the wrong area. Based on the measurements of that rhombus, calculate for the correct area and note your answer in the space provided.

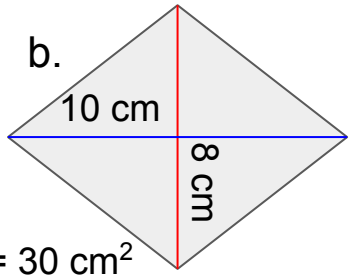
1. **Correct Area**

a.



Area = 48 cm^2

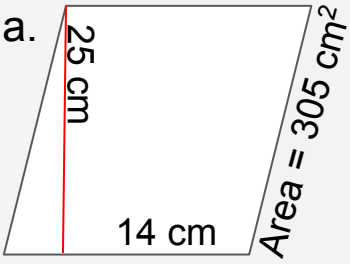
b.



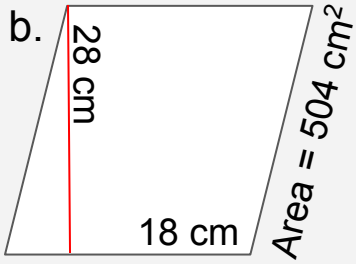
Area = 30 cm^2

2. **Correct Area**

a.

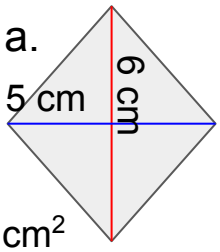


b.



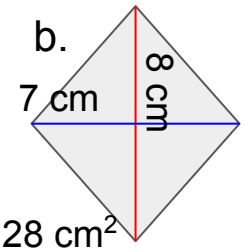
3. **Correct Area**

a.



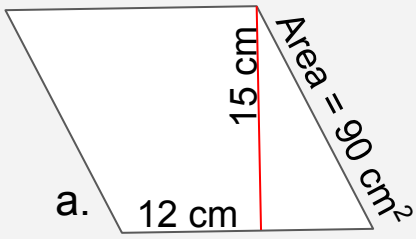
Area = 5 cm^2

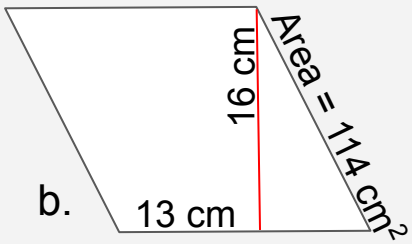
b.



Area = 28 cm^2

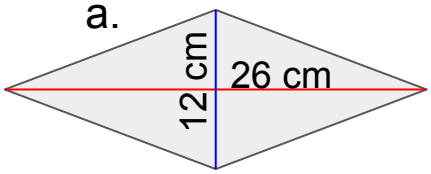
4. **Correct Area**





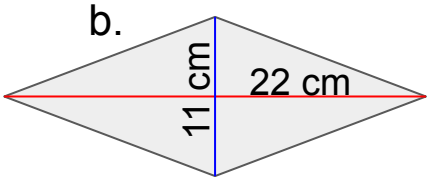
5. **Correct Area**

a.

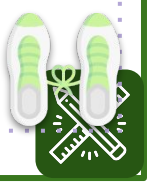


Area = 156 cm^2

b.



Area = 112 cm^2



FAMOUS HOAXES

G6 Advanced

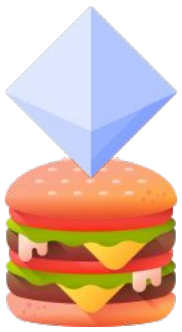
Media and companies also make use of April Fool's Day to gain attention or just make hoaxes and pranks. Read about a few of them and solve the word problems. Show your solutions.

1. On April Fool's Day 1957, British television aired a documentary on people harvesting spaghetti in an Italian-speaking region in Switzerland. Of course, this was a hoax but If the spaghetti farm was rhombus-shaped with an area of 50,000 m^2 and one diagonal of 200 m, then what is the measurement of its second diagonal?

   Solution:

2. In the late 90s during April Fool's Day, a famous burger chain created a special burger engineered for left-handed people. It was not real, of course, but what about a rhombus-shaped burger that has an area of 15 square inches. Its short diagonal is 5 inches. What is the measurement of its long diagonal?

   Solution:

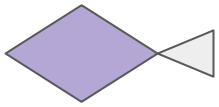


FOOLS AROUND THE GLOBE

G6 Advanced

Some cultures and countries celebrate April Fool's Day. Read about it in the word problems below. Solve the word problems and show your solutions.

1. During April Fool's Day, in some countries like Italy, France, and Belgium, they used to hang a fish on a person's back as a prank. Only when it smelled fishy that the victims were able to notice the fish. Nowadays, they use a paper fish to hang on the back of their April Fool's victim. *April fish* is what they call it. The paper fish has an area of 100 cm^2. Which of the following are possible measurements of the fish?

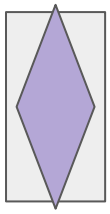


Solution:

a. 10 cm & 50 cm
b. 20 cm & 10 cm
c. 30 cm & 20 cm
d. 30 cm & 40 cm

2. *Prima aprilis* or *First April* in Latin, is celebrated in Poland. Before noon, people play elaborate pranks on each other. Generally, you should not take anything seriously on this day as it may not be true at all. For example, the area of a rectangle is 687.5 m^2. Oh, it's a rhombus and not a rectangle! Which of the following are possible measurements of this rhombus?

Solution:



a. 15 m & 45 cm
b. 35 cm & 25 cm
c. 25 m & 55 m
d. 45 cm & 25 cm

DIY PRANK

G6 Advanced

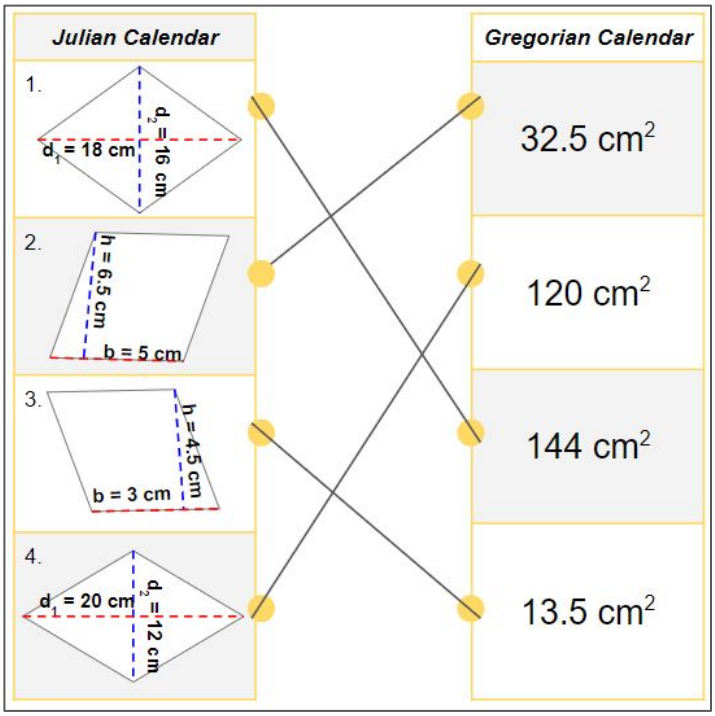
Draw three rhombuses and use your ruler to measure their diagonals. Calculate for their area and note these data on the chart below. Write funny jokes or notes on the rhombuses. You may cut them out and give them to your April Fool.

Rhombus	Rhombus 1		Rhombus 2		Rhombus 3	
Diagonals						
Area						

ANSWER GUIDE

Activity 1

1. 144 cm^2
2. 32.5 cm^2
3. 13.5 cm^2
4. 120 cm^2



Activity 2

1. 22.5 cm^2
2. 6.25 cm^2
3. 28 cm^2
4. 138 cm^2

Activity 3

1. Area = 150 m^2
   d_1 = 12 m
   d_2 = ?

   150 m^2/ 12 m = 12.5 m
   d_2 = 12.5 m

2. Area = 480 cm^2
   h = 32 m
   b = ?

   480 cm^2 / 32 cm = 15 cm
   base = 15 cm

3. d_1 = 38 ft
   d_2 = 15 ft
   Area = ?

   38 ft. x 15 ft. = 570 ft
   570 ft / 2 = 285 ft^2
   Area = 285 ft^2

ANSWER GUIDE

Activity 4

Person	1	2	3	4	5
Answer	C	E	A	D	B

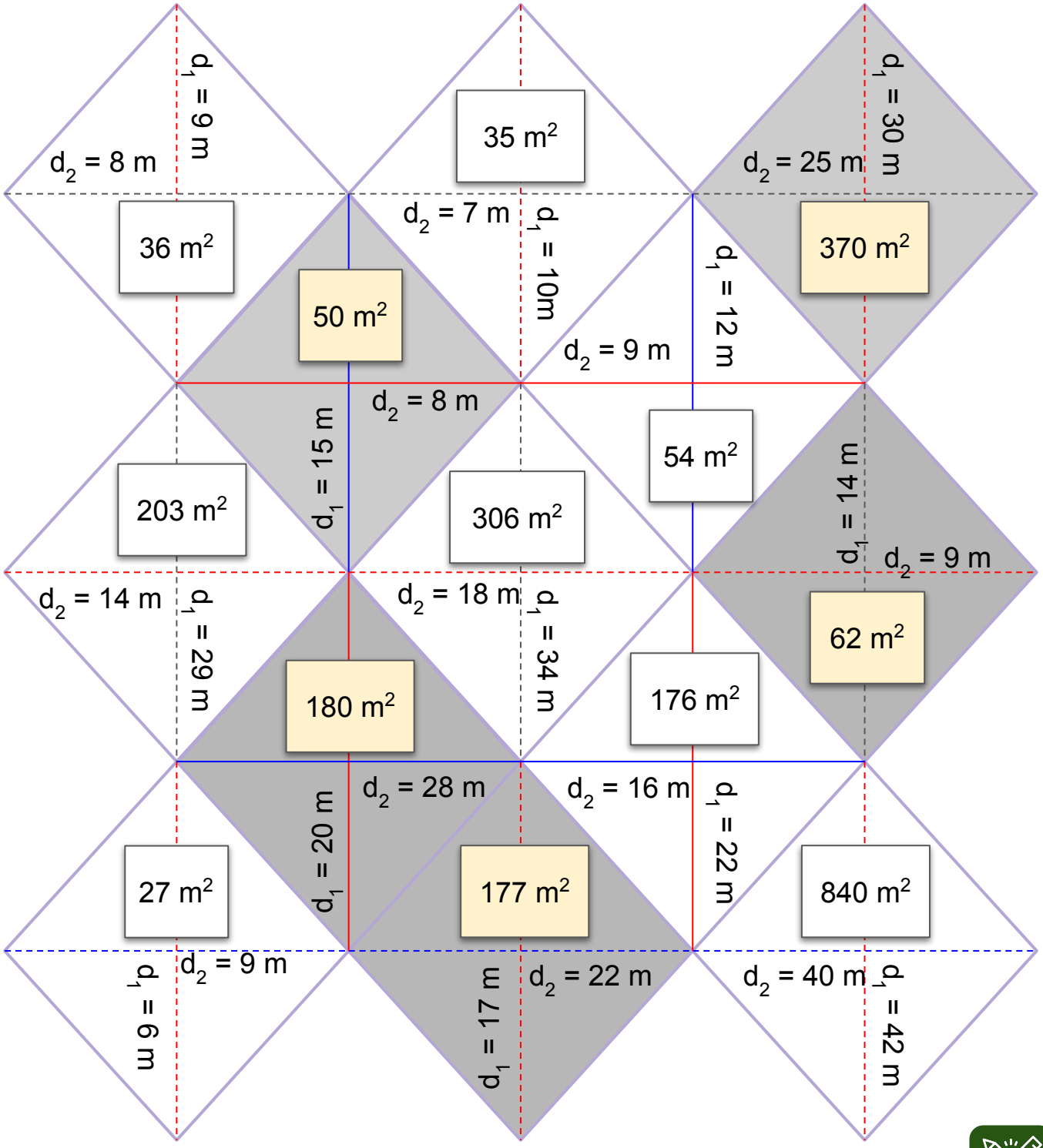
Activity 5

1. 8 m x 6 m = 48 m^2 48 m^2 / 2 = 24 m^2	O
2. 15 m x 12 m = 180 m^2	H
3. 73 m x 64 m = 4672 m^2 4672 m^2 / 2 = 2336 m^2	C
4. 21 m x 12 m = 252 m^2	T
5. 54 m x 45 m = 2430 m^2 2430 m^2 / 2 = 1215 m^2	G
6. 105 m x 80 m = 8400 m^2	A

The secret word is:
GOTCHA

ANSWER GUIDE

Activity 6



ANSWER GUIDE

Activity 7

1. B. / Correct Area: 40 cm^2
2. A. / Correct Area: 350 cm^2
3. A. / Correct Area: 15 cm^2
4. B. / Correct Area: 104 cm^2
5. B. / Correct Area: 121 cm^2

Activity 8

1. Area = 50,000 m^2
   d_1 = 200 m
   d_2 = ?

   50,000 m^2 x 2 = 100,000 m^2
   100,000 m^2 / 200 m = 500 m
   d_2 = 500 m

2. Area = 15 in^2
   d_1 = 5 in
   d_2 = ?

   15 in^2 x 2 = 30 in^2
   30 in^2 / 5 in = 6 in
   d_2 = 6 in

Activity 9

1. B. 20 cm & 10 cm
   Solution:
   20 cm x 10 cm = 200 cm^2
   200 cm^2 / 2 = 100 cm^2

2. C. 25 m & 55 m
   Solution:
   25 m x 55 m = 1375 m^2
   1375 m^2 / 2 = 687.5 m^2

Activity 10

Answers may vary.

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