

Write 3 equivalent fractions for each of the following fractions.

15) $\frac{5}{9}$ _____

16) $\frac{7}{8}$ _____

17) $\frac{9}{10}$ _____

18) $\frac{15}{100}$ _____

Write each group of fractions from least to greatest using $<$. Show your work.

19) $\frac{5}{9}, \frac{2}{3}, \frac{17}{18}, \frac{7}{9}$

20) $\frac{4}{5}, \frac{9}{10}, \frac{14}{20}, \frac{3}{4}$

21) $\frac{3}{4}, \frac{4}{3}, \frac{5}{3}, \frac{5}{6}, \frac{3}{2}$

22) $\frac{16}{15}, \frac{8}{5}, \frac{4}{3}, \frac{9}{10}, \frac{10}{15}$

Place each of the following numbers on the number line below.

23) $1\frac{1}{4}, 1\frac{1}{2}, \frac{3}{4}, 1\frac{3}{4}, 1\frac{2}{3}, \frac{2}{3}, \frac{7}{8}$



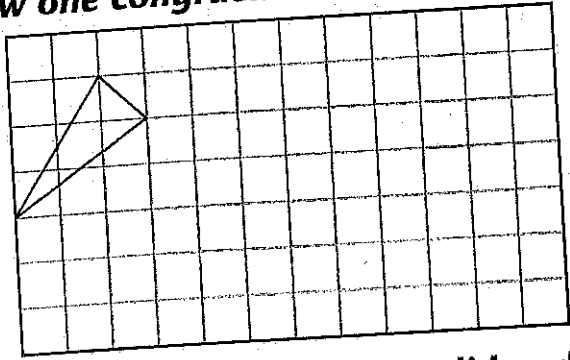
Write each group of the mixed numbers from greatest to least using $>$.

24) $2\frac{3}{4}, 2\frac{7}{8}, 1\frac{7}{8}, 1\frac{3}{4}, 2\frac{1}{2}, 2\frac{5}{8}$

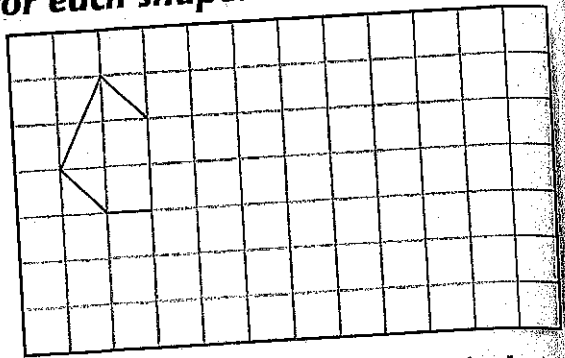
25) $3\frac{4}{5}, 3\frac{9}{10}, 3\frac{1}{2}, 3, 3\frac{1}{8}, 3\frac{1}{4}$

Draw one congruent and one similar figure for each shape.

29

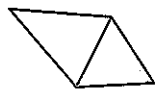


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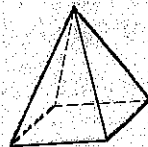


Complete the net for each solid and write the number of faces in the circle.

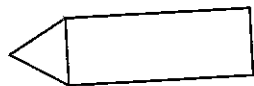
31



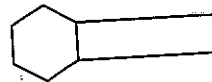
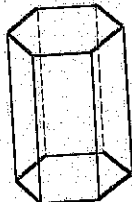
32



33

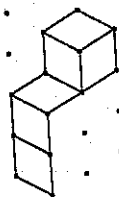
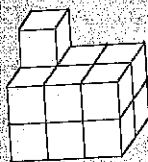


34

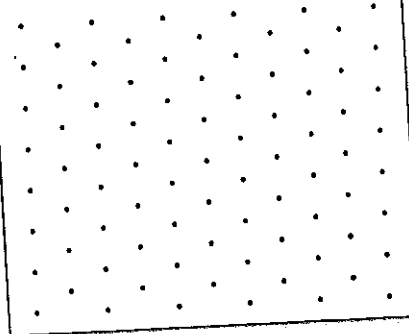
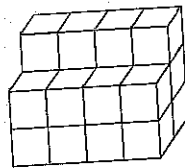


Tom has built some models with interlocking cubes. Help him draw the models on the isometric dot paper.

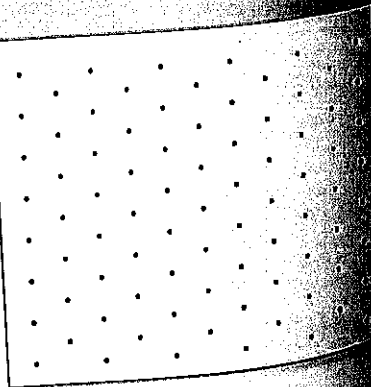
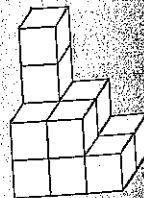
35



36

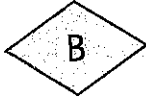


37



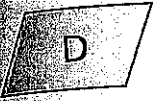
Write the names of the quadrilaterals.

28



A _____

B _____



C _____

D _____

E _____

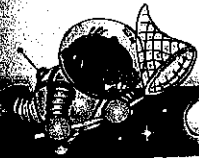
F _____

Check the boxes to show the properties of the shapes.

Property	Quadrilateral	Rectangle	Rhombus	Parallelogram	Square
39 opposite sides parallel					
40 all sides equal					
41 2 pairs of opposite sides equal					
42 all angles 90°					
43 2 pairs of opposite angles equal					

Read the clues. Write the names of the geometric figures.

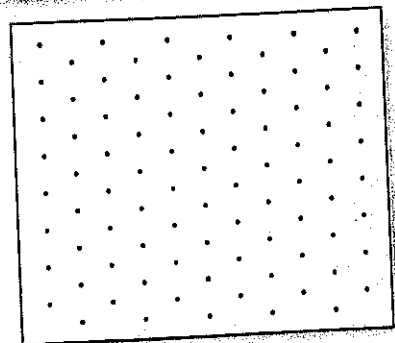
- 44 I am a solid with 6 congruent faces.
- 45 I am a solid with 4 faces.
- 46 I am a solid with 5 faces.
- 47 I am a 2-D figure with 4 lines of symmetry and rotational symmetry of order 4.



MIND BOGGLER

Look at the views of the model and draw it out.

Top	Front	Side



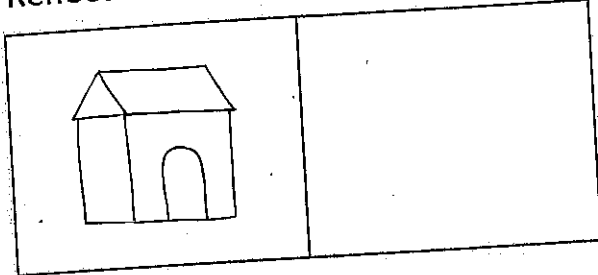


11

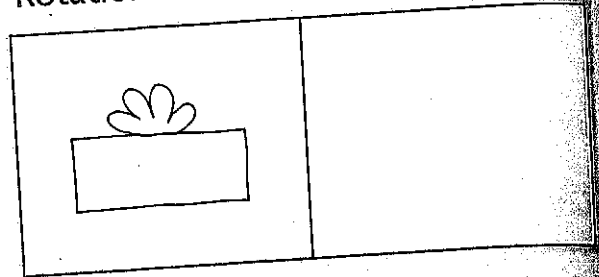
Transformations and Coordinates

Each picture undergoes two transformations. Draw the images of the pictures.

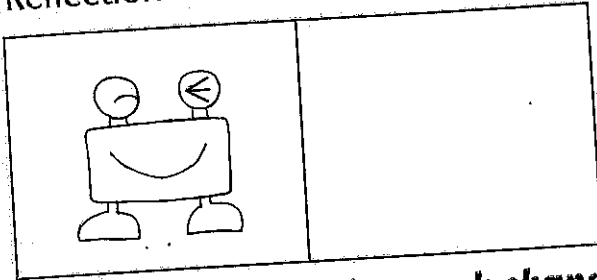
① Reflection and rotation



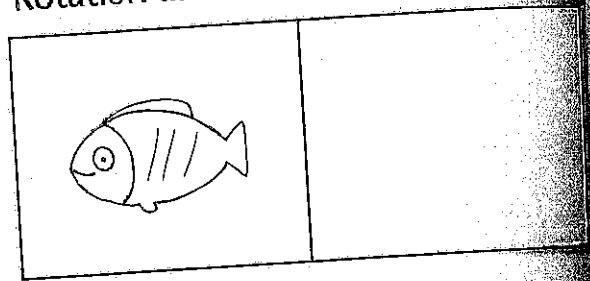
② Rotation and translation



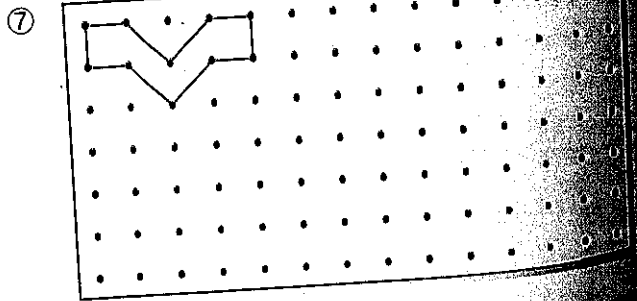
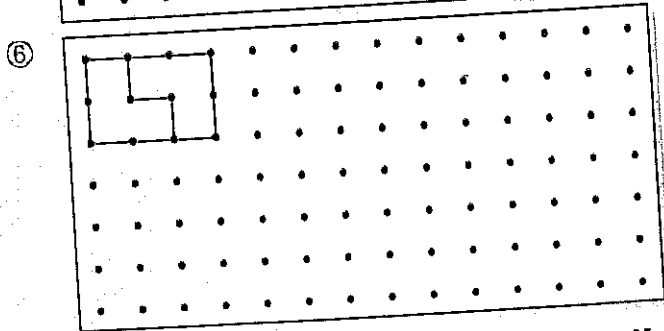
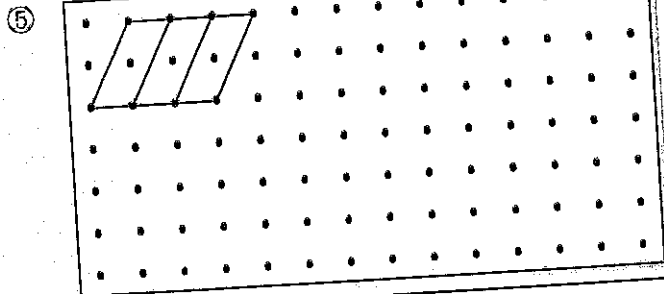
③ Reflection and translation



④ Rotation and reflection



Complete the tiling using each shape.



Quick Tip

Complete a tiling pattern using a shape by translating, reflecting or rotating the shape.

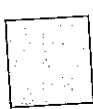
Check ✓ the figures which do not tile a plane.

⑧

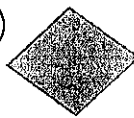
(A)



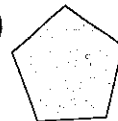
(B)



(C)



(D)



(E)



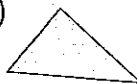
(F)



(G)



(H)



(I)

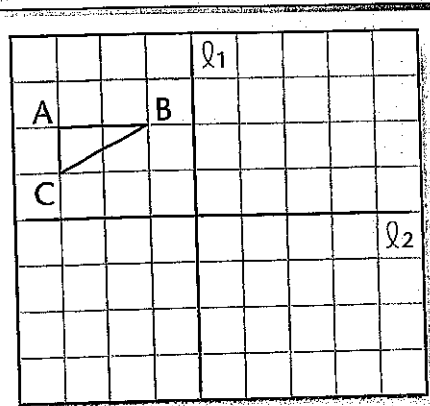


(J)

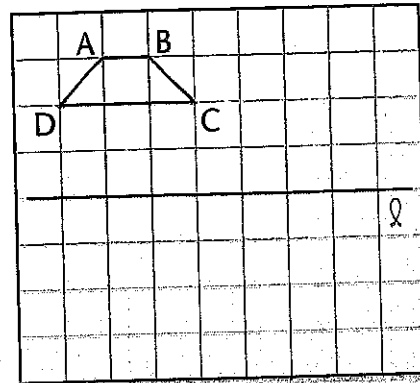


Draw the transformed images and answer the questions.

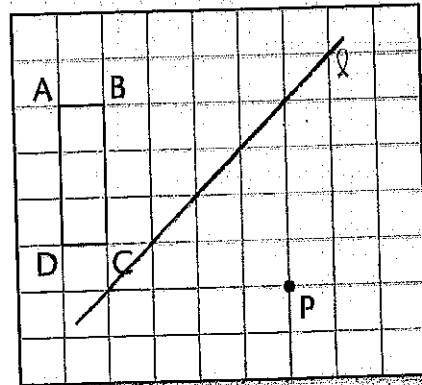
- 9 Reflect $\triangle ABC$ in ℓ_1 and label it \star .
- 10 Reflect \star in ℓ_2 and label it \heartsuit .
- 11 Would the result be the same if you reflected $\triangle ABC$ in ℓ_2 first and then ℓ_1 ?



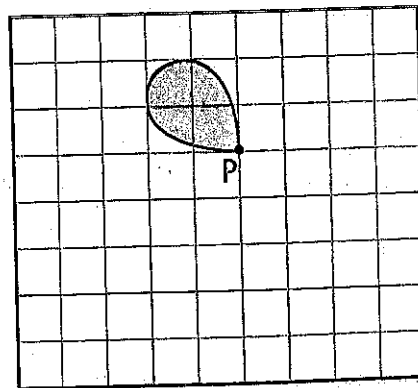
- 12 Translate trapezoid ABCD 3 units right and 1 unit down and label it \star .
- 13 Reflect \star in ℓ and label it \heartsuit .
- 14 Would the result be the same if you did the reflection before the translation?



- 15 Reflect rectangle ABCD in ℓ and label it \star .
- 16 Rotate \star a $\frac{1}{4}$ turn clockwise about point P and label it \heartsuit .
- 17 Would the result be the same if you did the rotation before the reflection?



- 18 Rotate the shaded figure a $\frac{1}{4}$ turn clockwise about point P and label it \star .
- 19 Translate \star 4 units down and 2 units left. Label it \heartsuit .
- 20 What transformations could you do to the final image to get back to the original position?



6

Multiplying and Dividing Decimals

EXAMPLES

1. 9.321×5
 $= 46.605$

$$\begin{array}{r} 9.321 \\ \times \quad 5 \\ \hline 46.605 \end{array}$$

3 decimal places in the factors
 3 decimal places in the product
 align all numbers on the right-hand side

2. $1523 \times 0.01 = 15.23$

2 decimal places
 in the factor

2 decimal places
 in the product

3. $7.987 \div 7$
 $= 1.141$

$$\begin{array}{r} 1.141 \\ 7 \overline{) 7.987} \\ \underline{7} \\ 9 \\ \underline{7} \\ 28 \\ \underline{28} \\ 7 \\ \underline{7} \\ 0 \end{array}$$

place a decimal point in the quotient
 above the one in the dividend

4. $2.394 \times 100 = 239.4$

2 zeros move the decimal
 point 2 places right

5. $723.1 \div 10 = 72.31$

1 zero move the decimal
 point 1 place left



HINTS:

- When multiplying a decimal by a whole number, the number of decimal places in the product is the same as that in the question.
- When dividing a decimal by a whole number, put the decimal point in the quotient directly above the dividend.
- When multiplying a decimal by 10 or 100, move the decimal point 1 place or 2 places right. The number of places moved equals the number of zeros.
- When dividing a decimal by 10, 100, etc., move the decimal point 1 place, 2 places, etc. left. The number of places moved equals the number of zeros.

Find the answers mentally.

① $3.241 \times 2 = \underline{\hspace{2cm}}$

② $3.984 \div 100 = \underline{\hspace{2cm}}$

③ $0.523 \div 10 = \underline{\hspace{2cm}}$

④ $12 \times 0.01 = \underline{\hspace{2cm}}$

⑤ $125 \times 0.1 = \underline{\hspace{2cm}}$

⑦ $1.2 \times 5 = \underline{\hspace{2cm}}$

⑨ $529.1 \div 100 = \underline{\hspace{2cm}}$

⑪ $3.693 \div 3 = \underline{\hspace{2cm}}$

⑥ $8.4 \div 7 = \underline{\hspace{2cm}}$

⑧ $75.937 \times 100 = \underline{\hspace{2cm}}$

⑩ $39.8 \div 10 = \underline{\hspace{2cm}}$

⑫ $6.824 \div 2 = \underline{\hspace{2cm}}$

Find the answers.

13 2.931×5

14 3.924×7

15 1.487×4

16 4.878×6

17 3.099×8

18 3.763×3

19 $7.917 \div 3$

20 $8.472 \div 6$

21 $14.835 \div 5$

22 $16.568 \div 8$

23 $49.83 \div 2$

24 $13.31 \div 2$

25 2.569×9

26 $57.617 \div 7$

3

Ratio and Rate

EXAMPLES

During an 8-week period, Ruth reads 10 books and David reads 14 books.

1. How many books does David read per week?

Books David reads per week = David's reading rate = $\frac{14}{8} = 1.75$ books/week

2. What is the ratio of the number of books read by Ruth to the number of books read by David?

The ratio is 10 : 14 or 5 : 7.

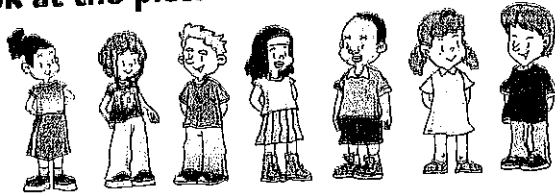
3. What fraction of the total does Ruth read?

Total number of books read by Ruth and David = $10 + 14 = 24$

Fraction of the total Ruth reads :

$$\frac{10}{24} = \frac{5}{12} \quad \leftarrow \text{reduce to lowest terms}$$

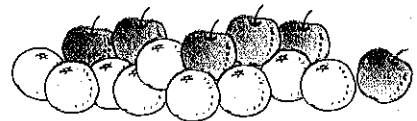
Look at the pictures. Write each ratio.



- ① Boys to girls : 3 : 4
- ② Girls to boys : _____
- ③ Boys to children : _____
- ④ Girls to children : _____



- ⑤ Dogs to cats : _____
- ⑥ Cats to dogs : _____
- ⑦ Cats to animals : _____
- ⑧ Dogs to animals : _____



- ⑨ Apples to oranges : _____
- ⑩ Oranges to apples : _____
- ⑪ Apples to fruits : _____
- ⑫ Oranges to fruits : _____



TIPS:

- Ratio is a comparison of two quantities.
e.g. There are 3 boys and 4 girls.
The ratio of boys to girls is 3 to 4.
- A ratio can be expressed in different ways.
e.g. 3 to 4, 3 : 4, $\frac{3}{4}$
- To find equivalent ratios, multiply or divide each term by the same number other than 0.
e.g. $\frac{10}{14} = \frac{10 \div 2}{14 \div 2} = \frac{5}{7} = \frac{5 \times 3}{7 \times 3} = \frac{15}{21}$
- A ratio is usually written in lowest terms or simplest form.
e.g. $\frac{5}{7}$ is in simplest form because the only common factor of the terms is 1.