



OzzieMaths
Series



Maths: Year 6



- ✓ number and algebra
- ✓ measurement and geometry
- ✓ statistics and probability

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Sample

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Teachers' Notes

Maths: Year 6 is part of *The OzzieMaths Series* which comprises seven books altogether. It is linked to the Australian Curriculum and each page in the book references the content descriptor/s and elaboration/s being addressed.

The activities have been designed to develop mathematical skills and reasoning in a creative way that is connected to solving problems in real-life contexts. Students will be asked to reflect upon the strategies used to problem-solve effectively in familiar situations and expand their ideas to realise that mathematical understanding has an important role in other subject areas. Answers and additional teaching information are included at the back of the book. This book is divided into three sections as detailed below.

Section One: Number and Algebra

In this section, students will engage in a variety of activities that require them to demonstrate ever-increasing capability in using mental and written strategies to explore number relationships and patterns. Tasks include: identifying and explaining the odd one out in a number series, exploring integers above and below sea level, playing equivalent fraction dominoes and writing number sentences with the powers of 10 to burst balloons.

Section Two: Measurement and Geometry

This section draws students' attention to the applications of calculating and comparing measurements of mass, length and capacity in our daily lives. Students will engage in activities such as: converting metric units of everyday objects, finding the correct dose of water conditioner for fish tanks and planning a ferry trip to the zoo by reading a timetable. Tasks investigating the Cartesian Plane include a parcel delivery race and designing a logo for the community.

Section Three: Statistics and Probability

Students will develop skills in interpreting and comparing data displays based on an extreme bike race and changes in height for women and men over the last century. They will consider how data can be skewed in displays to give a biased viewpoint and identify what to be on the lookout for. Tasks to describe probability focus on real-life examples and carrying out chance experiments with a small and large sample.

Curriculum Links

Number and Algebra

Identify and describe properties of prime, composite, square and triangular numbers (ACMNA122)

Select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers (ACMNA123)

Investigate everyday situations that use integers. Locate and represent these numbers on a number line (ACMNA124)

Compare fractions with related denominators and locate and represent them on a number line (ACMNA125)

Solve problems involving addition and subtraction of fractions with the same or related denominators (ACMNA126)

Find a simple fraction of a quantity where the result is a whole number, with and without digital technologies (ACMNA127)

Add and subtract decimals, with and without digital technologies, and use estimation and rounding to check the reasonableness of answers (ACMNA128)

Multiply decimals by whole numbers and perform divisions by non-zero whole numbers where the results are terminating decimals, with and without digital technologies (ACMNA129)

Multiply and divide decimals by powers of 10 (ACMNA130)

Make connections between equivalent fractions, decimals and percentages (ACMNA131)

Investigate and calculate percentage discounts of 10%, 25% and 50% on sale items, with and without digital technologies (ACMNA132)

Continue and create sequences involving whole numbers, fractions and decimals. Describe the rule used to create the sequence (ACMNA133)

Explore the use of brackets and order of operations to write number sentences (ACMNA134)

Curriculum Links

Measurement and Geometry

Connect decimal representations to the metric system (ACMMG135)

Convert between common metric units of length, mass and capacity (ACMMG136)

Solve problems involving the comparison of lengths and areas using appropriate units (ACMMG137)

Connect volume and capacity and their units of measurement (ACMMG138)

Interpret and use timetables (ACMMG139)

Construct simple prisms and pyramids (ACMMG140)

Investigate combinations of translations, reflections and rotations, with and without the use of digital technologies (ACMMG142)

Introduce the Cartesian coordinate system using all four quadrants (ACMMG143)

Investigate, with and without digital technologies, angles on a straight line, angles at a point and vertically opposite angles. Use results to find unknown angles (ACMMG141)

Statistics and Probability

Describe probabilities using fractions, decimals and percentages (ACMSP144)

Conduct chance experiments with both small and large numbers of trials using appropriate digital technologies (ACMSP145)

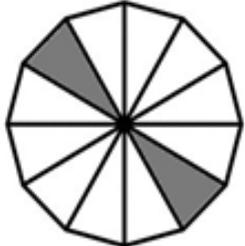
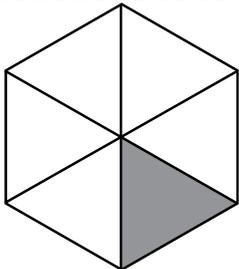
Compare observed frequencies across experiments with expected frequencies (ACMSP146)

Interpret and compare a range of data displays, including side-by-side column graphs for two categorical variables (ACMSP147)

Interpret secondary data presented in digital media and elsewhere (ACMSP148)

Equivalent Fractions Match 2

Cut out these dominoes and add them to the stack on page 14.

$\frac{6}{16}$		$\frac{15}{20}$	$\frac{11}{12}$
$\frac{6}{15}$	$\frac{1}{7}$	$\frac{22}{24}$	$\frac{4}{14}$
$\frac{2}{14}$	$\frac{1}{2}$	$\frac{2}{7}$	$\frac{6}{9}$
$\frac{4}{8}$		$\frac{2}{3}$	$\frac{4}{40}$
$\frac{14}{16}$	$\frac{2}{4}$	$\frac{1}{10}$	
$\frac{6}{12}$	$\frac{3}{4}$		finish



Fraction Problems 2

Solve the word problems below about fractions of whole numbers. Show your working out in the spaces provided.

1. Bella and James hold a bake sale to raise money for the local animal shelter. They raise \$125. Bella and James keep $\frac{1}{5}$ of the money to pay Mum for her cooking ingredients. How much do they donate to the animal shelter?

2. Two boxes containing 48 books each, arrive in the library. By morning break the librarian has placed $\frac{3}{8}$ of the books on the shelves. How many books are still in the boxes?

3. Henry buys 40 litres of bright green paint on sale. If it takes 5 litres to paint one room, how many rooms in the house can he paint bright green?

4. Anna has $1\frac{3}{4}$ hours to do her homework, practise her drums and play with her cat. If she wants to divide her time equally among the three activities, how much time will she spend on each?

5. Mr. Picky only chooses perfect cherries to make his pies. Out of 500 cherries, he rejects $\frac{3}{10}$. How many cherries do not end up in Mr. Picky's pies?

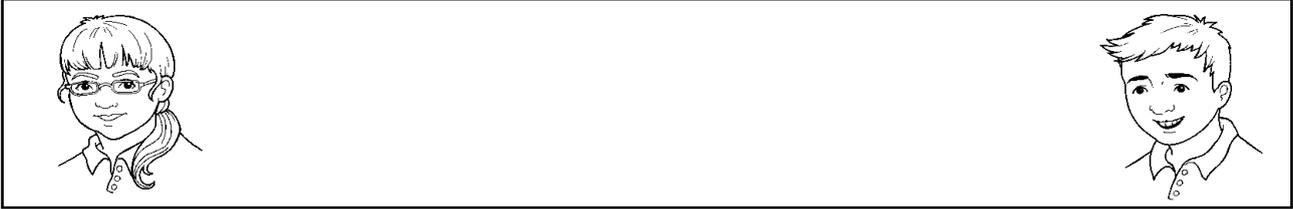
6. Kieren wants to make a surprise birthday cake for his Dad. He needs 240g of butter, but he can only find $\frac{2}{3}$ of that amount in the fridge. How much butter does Kieren have?

7. Chloe receives a new camera for Christmas. On Boxing Day she takes 28 photos, but only $\frac{3}{4}$ of them are in focus. How many photos are too fuzzy to print?

More Or Less Problems

Solve the word problems below that include fractions, decimals and percentages. Do your written work in the spaces provided.

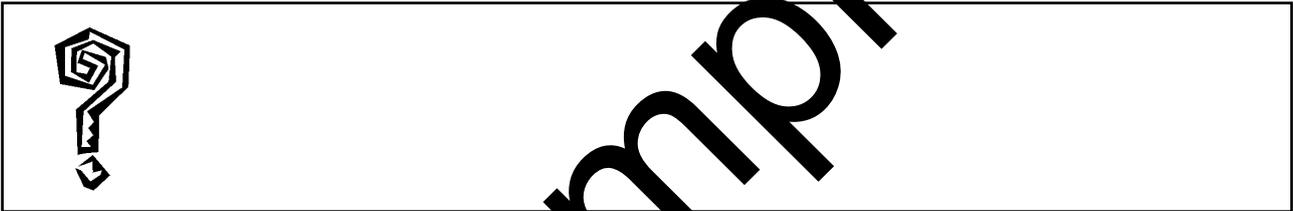
1. Marie has 25% of \$500 and Gregory has $\frac{2}{5}$ of \$550. Who has more?



2. After the end-of-year class party, 2 out of 8 children have tummy ache. What percentage of children feel unwell?



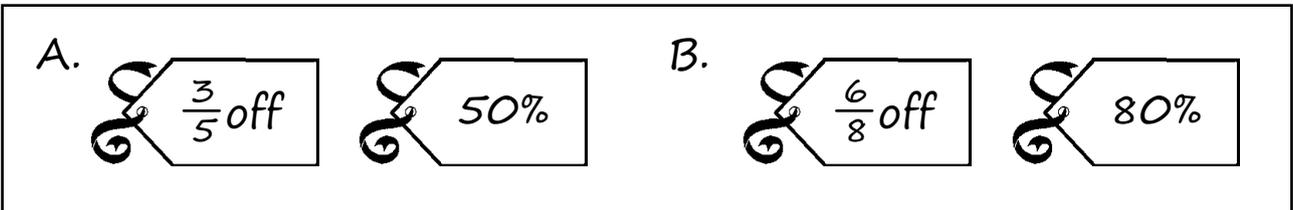
3. Which is bigger: 0.125 or 15%?



4. Our maths test had 60 questions and I got $\frac{1}{5}$ of the questions correct. You got 85% correct. Who got more questions correct?



5. It's sale time at the department store. Shade in the price tag that gives the better discount for A and B.

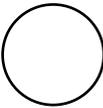
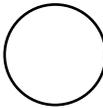
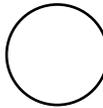


6. David's drink bottle is 0.5 full and contains 360ml of water. Diana's drink bottle is 60% full and contains 390ml. Whose water bottle has the greater capacity?



Sequences

Write the missing whole numbers, fractions and decimals to complete the sequences below. Describe the pattern in each sequence.

1. $1\frac{1}{2}$ $2\frac{1}{2}$ $3\frac{1}{2}$ $4\frac{1}{2}$ $5\frac{1}{2}$   

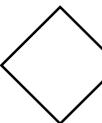
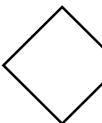
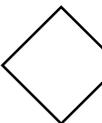
Describe the pattern: _____

2. 4.25 4 3.75 3.5 3.25   

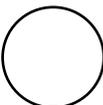
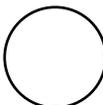
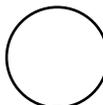
Describe the pattern: _____

3. 392 380 368 356 344  

Describe the pattern: _____

4. $6\frac{1}{4}$ $6\frac{3}{4}$ $7\frac{1}{4}$ $7\frac{3}{4}$ $8\frac{1}{4}$   

Describe the pattern: _____

5. 0.15 0.19 0.23 0.27 0.31   

Describe the pattern: _____

6. $9\frac{1}{3}$ 9 $8\frac{2}{3}$ $8\frac{1}{3}$ 8   

Describe the pattern: _____

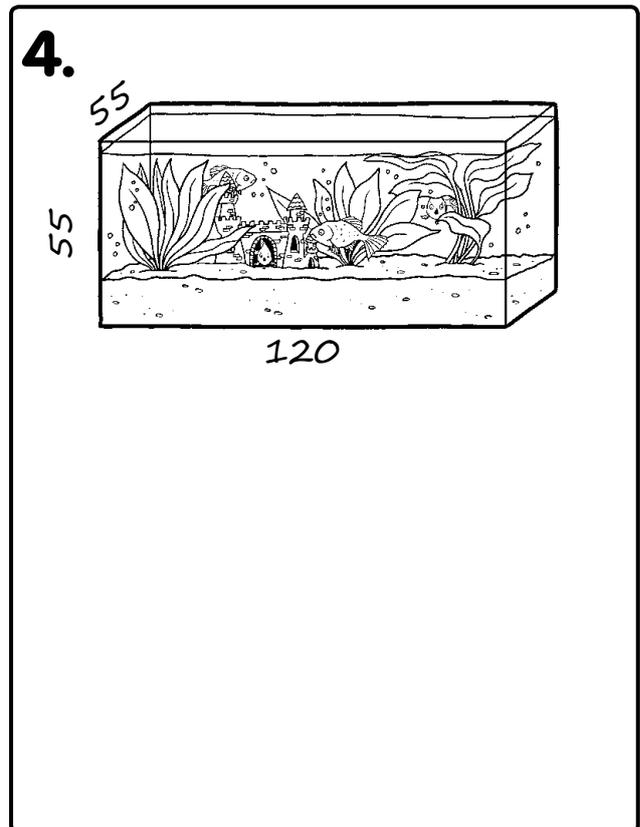
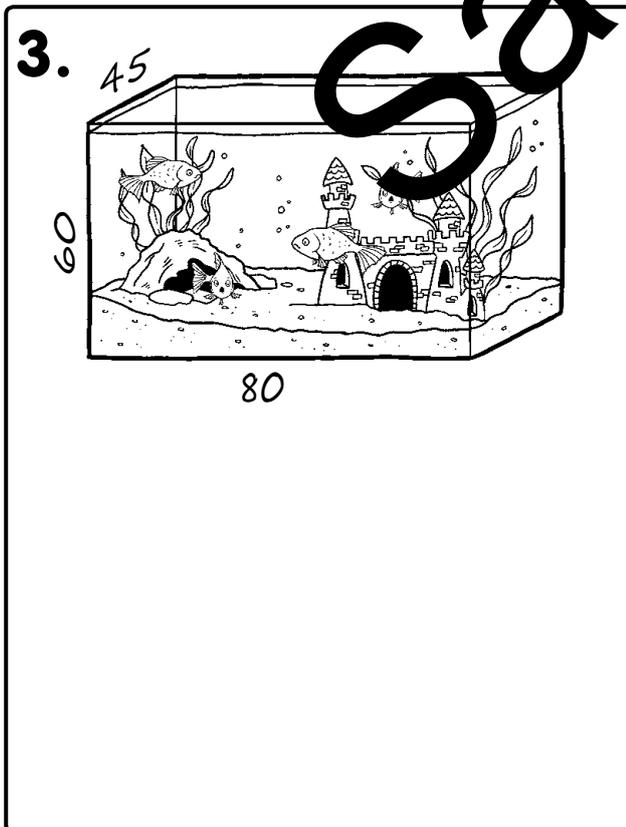
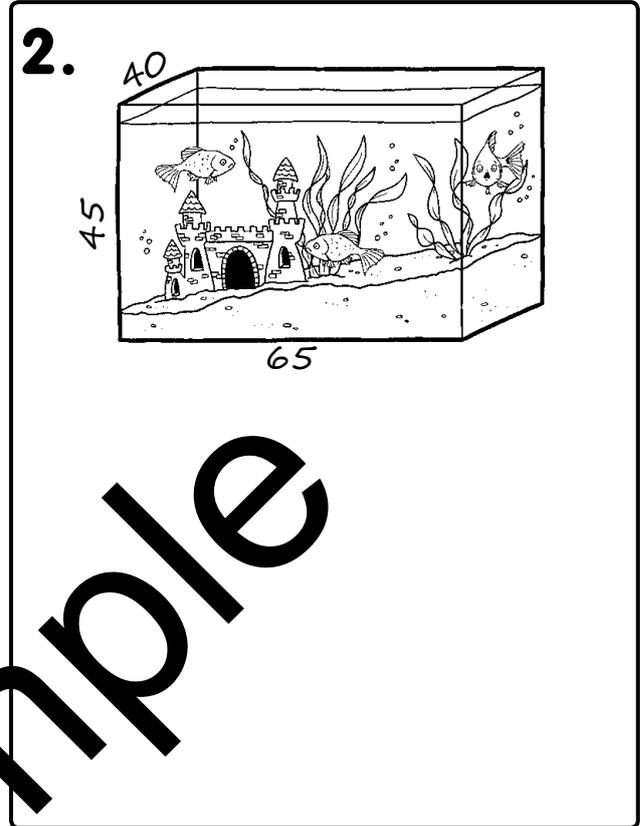
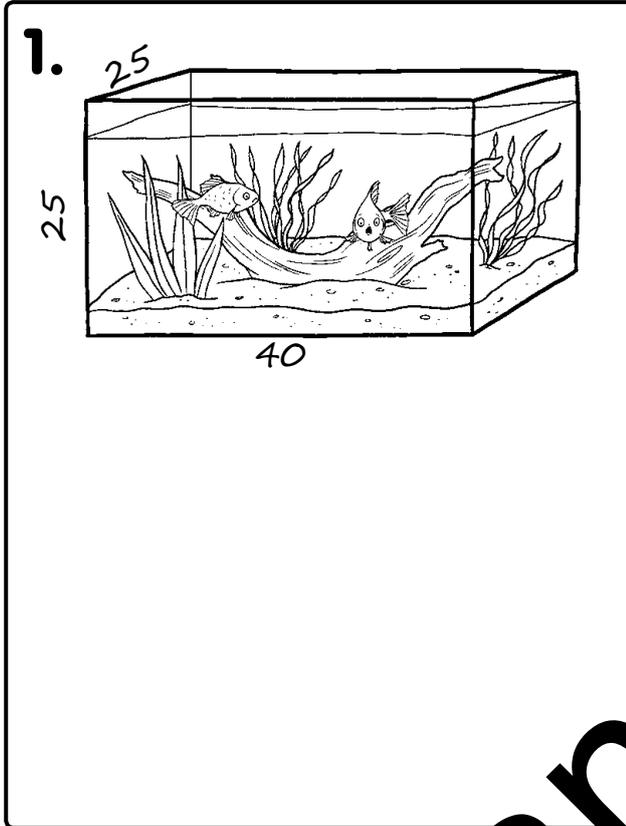
7. 225 196 169 144 121   

Describe the pattern: _____

Extra! Create a sequence for a peer to solve on the back of this sheet.

Fish Tank Volumes

Calculate (with or without digital technology) the volume of water in litres in the fish tanks below (volume = $l \times h \times w$). Note that the water line is 5cm below the rim of the tank (height = 5cm). Remember: $1000 \text{ cm}^3 = 1 \text{ litre}$.



Angles in Action

Look at these images of athletes in action. Observe the angles that their bodies form.



1. Classify the types of angles in the images. Complete the table with the lettered angles.

RIGHT ANGLE 90°	ACUTE ($< 90^\circ$)	OBTUSE ($> 90^\circ$)

2. Estimate the size of the angles.

A.	B.	C.	D.
E.	F.	G.	H.

3. Measure the angles with a protractor. How close were your estimates?

A.	B.	C.	D.
E.	F.	G.	H.

Extra! Draw a stick figure athlete in action on the back of this sheet. Mark some angles on your athlete. Ask a peer to measure the size of the angles.

Looking For X



Finding x is a breeze if you follow these clues:

- Angles on a straight line equal 180° .
- Angles in a triangle equal 180° .
- When two lines intersect, they form two pairs of opposite angles that are congruent.
- When a line intersects two parallel lines, the interior angles are congruent.

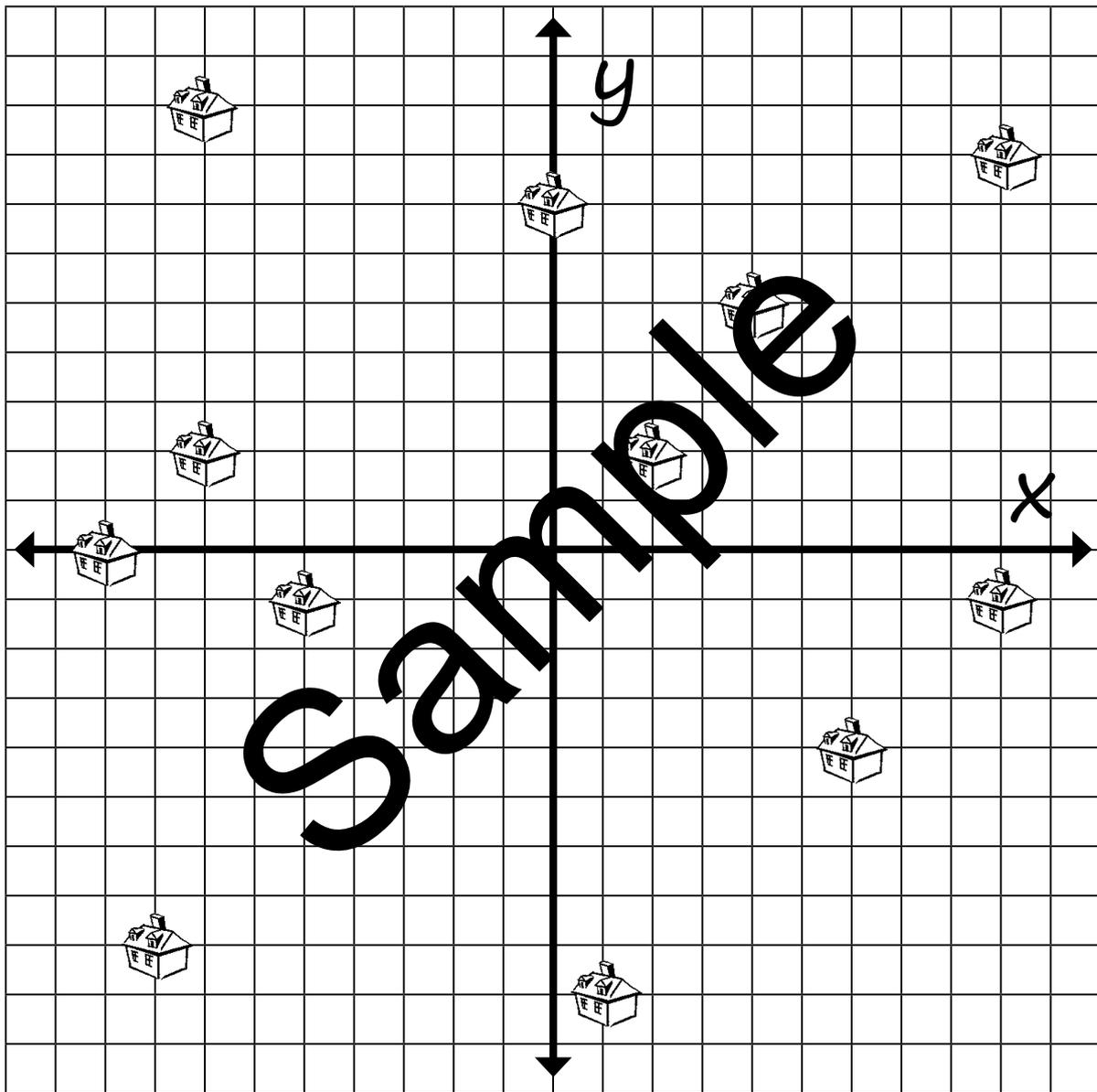
What does x equal in each of these?

<p>1. <input type="checkbox"/></p>	<p>2. <input type="checkbox"/></p>
<p>3. <input type="checkbox"/></p>	<p>4. <input type="checkbox"/></p>
<p>5. <input type="checkbox"/></p>	<p>6. <input type="checkbox"/></p>
<p>7. <input type="checkbox"/></p>	<p>8. <input type="checkbox"/></p>

Fast Delivery (Student B)

You are going to call out coordinates to your partner so he/she can deliver pizzas to the houses in the correct order. If you take too long, the pizza is free!

- Before you send your partner out to deliver pizzas, make sure you can identify the coordinates of the houses on the plane below (write them at the bottom of the page). Number the order (1 – 12) of the deliveries, too, on the plane next to the houses. (Don't show your partner your sheet - they have their own!)



Coordinates

A.	B.	C.	D.
E.	F.	G.	H.
I.	J.	K.	L.

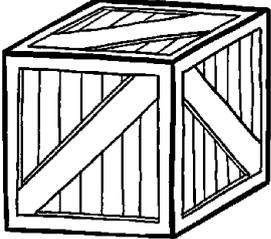
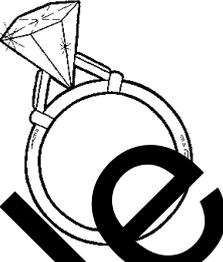
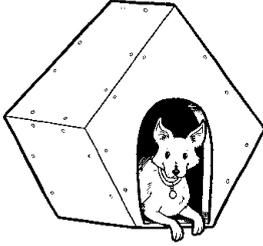
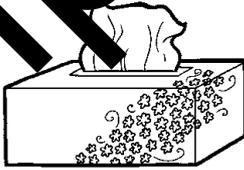
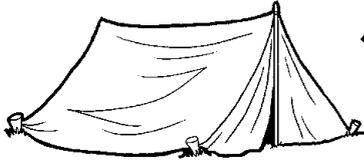
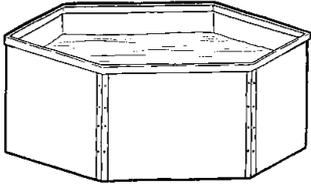
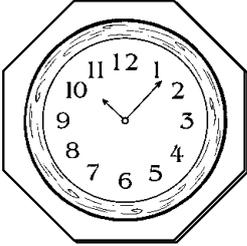
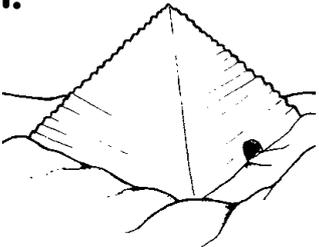
Prisms Around Us

Prisms are everywhere - from the pyramids of Egypt and China, to packets on supermarket shelves.

- Match the list of prisms/pyramids (below) with the images, then complete the missing information about the features of each one.

LIST OF PRISMS/PYRAMIDS

hexagonal prism triangular prism octagonal prism pentagonal prism
square-based pyramid cuboid square prism hexagonal pyramid

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vertices:	16														
edges:															
faces:															
vertices:															
edges:	8														

Extra! Find a net of one of these 3D prisms or pyramids and construct it. To download a variety of nets online go to: www.korthalsaltes.com/