Interactive I.T. Student Activity Sheets Junior Certificate Strand 3

- **Student Activities written to match the I.T. interactive modules on the Project Maths Junior Certificate Student's CD Strand 3**
- **Interactive Activity Sheets included to enhance students' understanding of mathematical concepts**
- **Simple and clear guidelines are provided to facilitate learning**
- **Interesting questions are provided to lead students to explore, construct and consolidate their learning**

Preface

The NCCA have pointed out particular Key Skills in their Draft Syllabus. "While particular emphasis is placed in mathematics on the development and use of information processing, logical thinking and problem-solving skills, the new approach being adopted in the teaching and learning of mathematics will also give prominence to students being able to develop their skills in communicating and working with others. By adopting a variety of approaches and strategies for solving problems in mathematics, students will develop their self-confidence and personal effectiveness." To help our students to adapt to and take advantage of this new spirit of the syllabus, we have produced Interactive I.T. Student Activity Sheets which incorporate an innovative and diversified learning environment for mathematics.

As we all know, the advancement in technology has changed the way we can learn mathematics. Therefore we have developed a number of interactive modules on our student's CD to match this new development. With the help of these interactive modules, students can not only enhance their understanding in mathematics, but they can also enjoy learning it.

In order to help our students use the I.T. tools more effectively, ***Interactive I.T. Student Activity Sheets Junior Certificate Strand 3*** are produced in this booklet. A student activity sheet is designed for the majority of the interactive modules on the CD. All student activity sheets provide simple and clear guidelines including:

1. Reference to the related topics in ***Project Maths Student's Junior Certificate Strand 3 section***
2. Purpose of the I.T. tools
3. Instructions for using the I.T. tools.

These Student Activity Sheets, which include many interesting questions, will lead students to explore, construct, and consolidate their knowledge of mathematics on their own with ease. We believe that with the help of these activities, students' knowledge and understanding of mathematics will grow.

Table of Contents

Instructions for use

This booklet contains student activities to accompany the majority of the interactive files on the Junior Certificate Strand 3 section of the student disk. The specific section of the course that the activity relates to is specified in the name of the activity. At the top of each student activity the students are told what interactive file on the student disk is to accompany the student activity.

Technical Problems

The student disk has a link situated on the left hand side of its front page called "Troubleshooting" this section gives instructions, if any of the following problems are encountered:

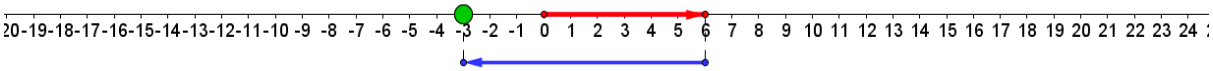
- Problems opening Office 2007 documents
- You do not have Java on your machine
- You do not have a PDF reader on your machine.

Student Activity: Adding Integers

Use in connection with the interactive file, 'Adding Integers', on the Students CD.

For example show (6) + (-9) = - 3:

(6) + (-9) = -3



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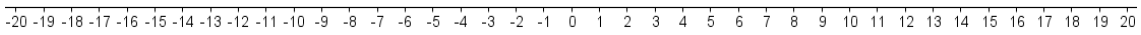
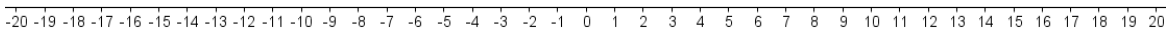
1. Using the example above as a guide, show the following addition of integers on the number lines provided:

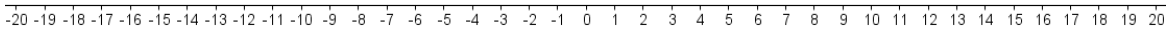
   (a) 4 + (-3)



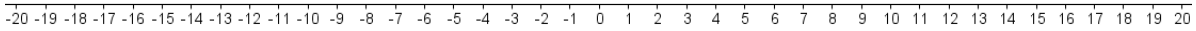
   (b) $4+(-2)$



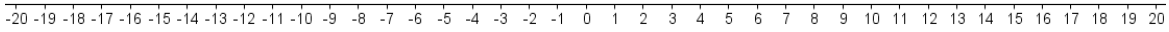
   (c) $-5+6$



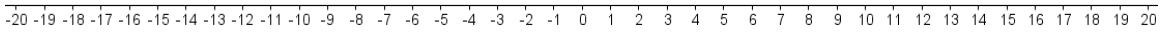
   (d) $-4+(-2)$



   (e) 8 – 8 Note this means 8 + (–8)



   (f) $4-6$ Note this means 4+ (–6).



2. Calculate the following:

   a. 4 + 5

   b. 4 – 5

   c. –4 + 5

   d. –4 – 5

   e. –8 –7

   f. 8 – 7

   g. –7+8

   i. – 9 + 9

3. Laura owes €5 and she repays €2, how much does she owe then?

   _____

4. Anne owes €10 and borrows a further €5, how much does she owe now?

_____

5. Patrick owes €8 and a week later his aunt gives him €25. If he pays back the amount he owes, how much does he now have?

_____

6. Kieran owes €5 but his aunt gives him €6 and his uncle gives him €7. Does he have enough to buy €10 phone credit if he pays back the money he owes? Explain your answer.

_____

_____

7. The current temperature is minus 2^{o}C. What temperature should we expect if this is due to increase by 7^{o}C in the afternoon and then decrease by 10^{o}C at night.

_____

8. Grainne is on the 3rd floor of a building and walks down 4 sets of stairs, what floor is she now on, provided each set of stairs brings you down one floor?

_____

9. Write your own questions using the numbers below:

   (a) $-3 + 10$

   _____

   _____

   (b) $-4 + (-8)$

   _____

   _____

   (c) $7 + (-10)$

   _____

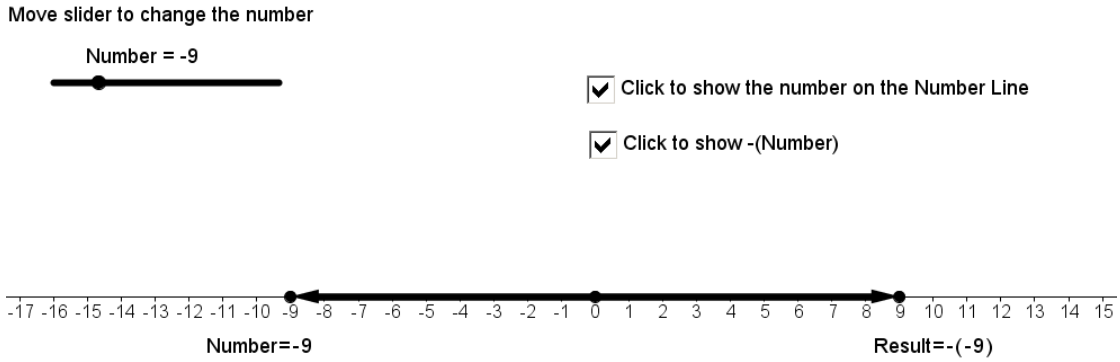
   _____

10. What is the largest negative integer?

_____

<u>Student Activity:</u> To investigate minus an Integer

Use in connection with the interactive file, 'Minus Integers', on the Student's CD.



1. Show 4 on the number line and show − (4) on the same number line.

-20 -19 -18 -17 -16 -15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

2. Show 5 on the number line and show − (5) on the same number line.

-20 -19 -18 -17 -16 -15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

3. Show −3 on the number line and show − (−3) on the same number line.

-20 -19 -18 -17 -16 -15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

4. Show −2 on the number line and show − (−2) on the same number line.

-20 -19 -18 -17 -16 -15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

5. What does a minus in front of a number do to the number on the number line?

_____

6. What is − (2)?

_____

7. What is − (−6)?

_____

8. How do − (−5) and −5 differ on the number line?

_____

9. Show − (−7) on the number line.

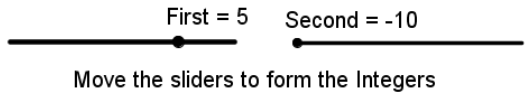
-20 -19 -18 -17 -16 -15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

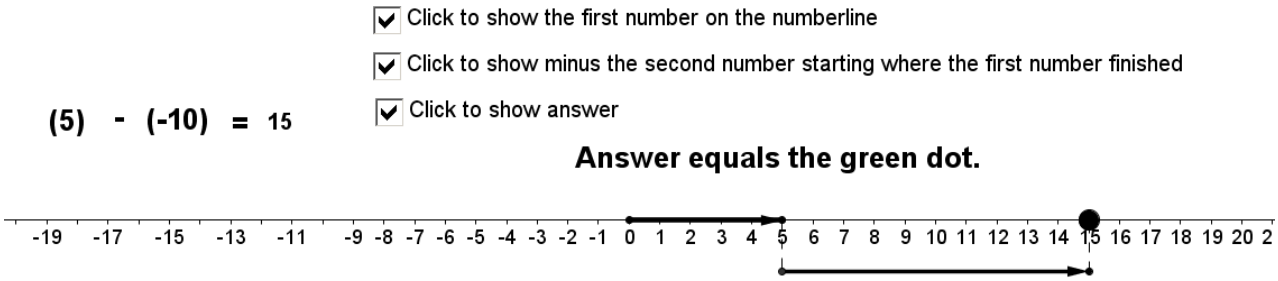
10. What does a minus in front of an integer do to the sign of the integer?

_____

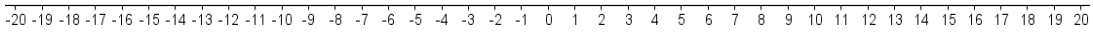
<u>Student Activity:</u> To investigate subtraction of Integers

Use in connection with the interactive file, 'Subtracting Integers', on the Student's CD.

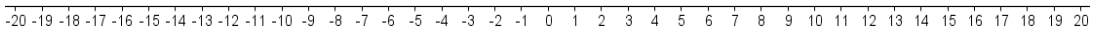




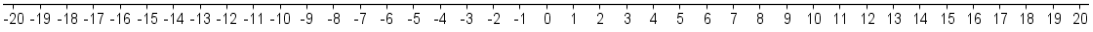
1. Show 4 + 2 on the number line.



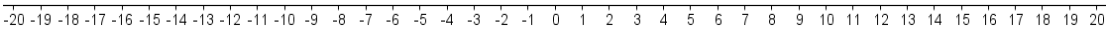
2. Show 4 − 2 on the number line.



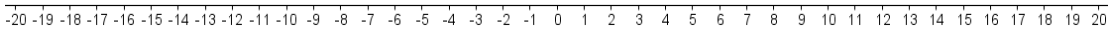
3. Show 4 – (− 2) on the number line.



4. Show 5 – (− 3) on the number line.



5. Show –5 – (− 3) on the number line.



6. If the temperature in a certain town is minus three degrees and you are told that it will be two degrees colder the next day, what temperature will it be the next day? Show your calculations.

   _____

7. If the temperature in a certain town is minus three degrees and you are told that it will be two degrees warmer the next day, what temperature will it be the next day? Show your calculations.

_____

8. If the temperature in a certain town is three degrees and you are told that it will be five degrees colder the next day, what temperature will it be the next day? Show your calculations.

_____

9. If you were on the minus one floor in a lift and you went up four floors, what floor would you be on? Show your calculations.

_____

10. Fill in the following answers:

(a) $-4 + 1 =$

(b) $-4 + 0 =$

(c) $-4 - 1 =$

(d) $-4 - 5 =$

(a) $3 - 3 =$

(b) $3 - 2 =$

(c) $3 - 1 =$

(d) $3 - 0 =$

(e) $3 - (-1) =$

(f) $3 - (-2) =$

(g) $3 - (-3) =$

(h) $3 - (-4) =$

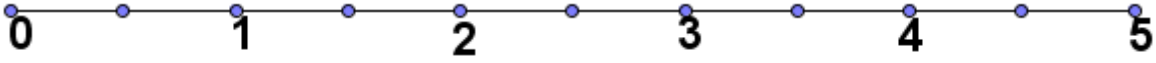
(i) $-5 - (-1) =$

(j) $-9 - (4 - (-3)) =$

<u>Student Activity:</u> Decimals on the Number Line

Use in connection with the interactive file,' Number Line', on the Student's CD.

1. Mark the following points on this number line:
   a. 2.1
   b. 1.2
   c. 3.9
   d. 2
   e. 0.7
   f. 2.4
   g. 2.9



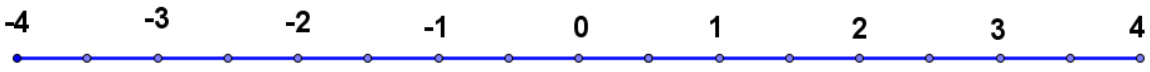
2. Is 2.4 on the right or on the left of 2.6 on the number line? Explain why.

   _____

3. Is 4.1 on the right or on the left of 3.9 on the number line? Explain why.

   _____

4. Mark the approximate location of the following points on this number line:
   a. -1.1
   b. 1.1
   c. -3.2
   d. -2.3
   e. -2.9
   f. 0.9
   g. 3.2



5. Is -2.5 on the right or on the left of 2.5 on the number line? Explain why.

   _____

6. Is -2.8 on the right or on the left of -2.6 on the number line? Explain why.

   _____

7. Is -2.9 on the right or on the left of 2.6 on the number line? Explain why.

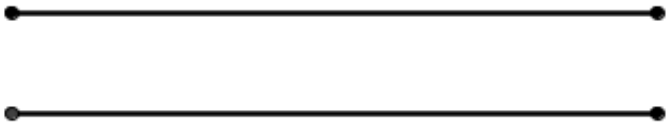
   _____

Student Activity: Comparing Fractions

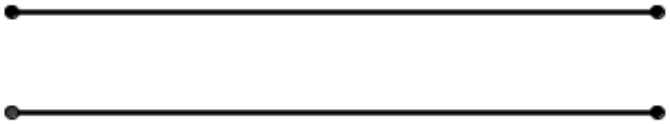
Use in connection with the interactive file, 'Comparing Fractions', on the Student's CD.

1. Represent the following fractions on the set of number lines provided and state which fraction is the bigger in each case.

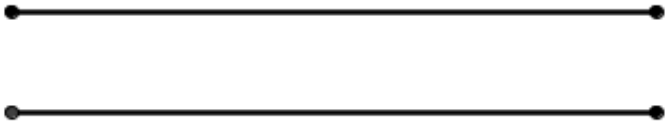
a. $\frac{1}{4}$ and $\frac{1}{8}$



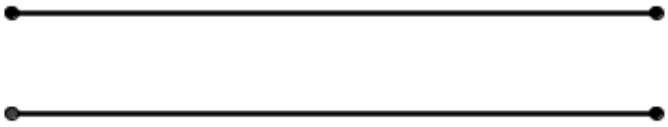
b. $\frac{7}{8}$ and $\frac{9}{10}$



c. $\frac{3}{4}$ and $\frac{5}{6}$



d. $\frac{7}{8}$ and $\frac{5}{6}$



2. What is the relationship between the numerator and the denominator when the fraction is less than 1?

_____

3. What is the relationship between the numerator and the denominator when the fraction is greater than 1?

_____

4. Is the fraction $\frac{4}{6} = \frac{2}{3}$? Explain.

_____

_____

5. Which would be a better deal, $2\frac{2}{3}$ or $2\frac{5}{6}$ of a sum of money? Explain your answer.

_____

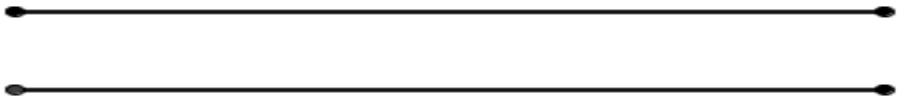
6. List 4 fractions that are equivalent to (have the same value as) $\frac{1}{4}$.

_____

_____

7. Looking at 2 fractions on two number lines how would you know if they were equivalent? Illustrate your answer with an example using the number lines provided.

_____



8. I gave $\frac{7}{8}$ of a bar of chocolate to Joel. I gave the same amount of chocolate to Irene from a bar with 16 sections. How many sections did Irene get?

_____

_____

9. Jonathan got 7 out of 12 in a test and Mark got 10 out of 15 in another test. Did the students do equally well because they both got 5 questions wrong in their tests? Explain your answer.

_____

_____

10. Two students plan to buy a new outfit for themselves. Margaret's chosen outfit costs €40 and she has saved €22. Ellie's chosen outfit costs €50 and she has €25 saved.
    a. What fraction of the cost of her outfit has Margaret saved?

    _____

    b. What fraction of the cost of her outfit has Ellie saved?

    _____

    c. Which student has saved the higher fraction of the cost of their new outfit? Explain._____

    d. Provided they each save the same amount each week from now on which student will get their outfit first? Explain.

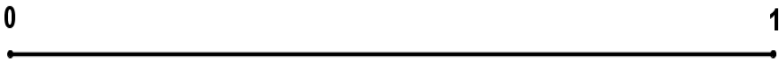
    _____

<u>Student Activity:</u> Comparing Decimals

Use in connection with the interactive file, 'Comparing Decimals', on the Student's CD.

1. Represent the following numbers on the on the number lines provided and in each case state which is the bigger, giving a reason for your answer:

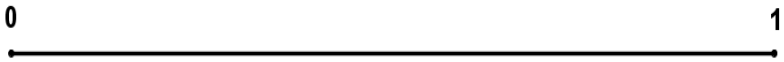
(a) **0.5** and **0.4**



Reason: _____

_____

(b) **0.25** and **0.2**



Reason: _____

_____

(c) **0.75** and **0.5**

Reason: _____

_____

(d) **0.75** and $\frac{3}{4}$

Reason: _____

_____

(e) **0.7** and **0.07**

Reason: _____

_____

(f) **0.99** and **1.1**

Reason: _____

_____

2. Assuming you like this brand of chocolate, which would you prefer, 0.75 of the bar or 0.57 of the same bar? Explain your answer.

_____

_____

3. Kate has €40 in her purse and plans to buy this jacket costing 0.8 of her pocket money. How much will she spend on the jacket?

_____

_____

4. Out of a test of 30 questions Máiréad got 0.4 of these questions correct. How many questions did Máiréad get incorrect?

_____

_____

5. Patricia wants to purchase an MP3 player for €169.20. She has 0.125 of the cost of the MP3 player in savings. She has started a babysitting job which pays €25 a week. How many weeks will she need to work to save the amount needed to buy the MP3 player? Round your answer to the nearest whole number.

_____

_____

_____

_____

Student Activity: Comparing Percentages

Use in connection with the interactive file, 'Comparing Percentages', on the Student's CD.

1. Represent the following percentages on the number lines provided and in each case state which is bigger and why?

   a. 40% and 50%

   0% ——— 100%

   Reason:

   _____

   b. 99% and 9.9%

   0% ——— 100%

   Reason:

   _____

   c. 75% and 57%

   0% ——— 100%

   Reason:

   _____

   d. 33.3% and the fraction $\frac{1}{3}$

   0% ——— 100%

   Reason:

   _____

   e. 89% and 98%

   0% ——— 100%

   Reason:

   _____

2. Which would you prefer 25% or ⅔ of your favourite cake?
   Explain your reason.

   _____

3. Noel ate 30% of a cake and then gave 25% of the remaining cake to his friend.

   a. What percentage of the whole cake was eaten?

   _____

   b. What percentage of the whole cake was left over?

   _____

4. Martha got 56% in her maths exam and Joe got ⅗ of the questions right in the same exam. Which student did best and why?

   a. _____

5. Cynthia got 45 marks in a test where the total marks were 50 and Lorna got 21 marks in a test where the total marks were 25. Which student did best in their tests assuming the tests were of the same standard?

_____

_____

6. Danny ate 40% of a bag of sweets and then gave his friend 50% of the remaining sweets. Assuming there was 40 sweets in the bag:
   a. How many sweets did Danny eat? Explain your answer.

      _____

      _____

   b. How many sweets did his friend eat? Explain your answer.

      _____

      _____

   c. How many sweets were left over? Explain your answer.

      _____

      _____

7. A class consists of 15 girls and 10 boys. five of the girls wear glasses and two of the boys wear glasses:

   a. What percentage of the class are girls? Explain your reason.

      _____

      _____

   b. What percentage of the class are boys? Explain your reason.

      _____

      _____

c. What percentage of the girls wears glasses? Explain your reason.

_____

_____

d. What percentage of the class wears glasses? Explain your reason.

_____

_____

e. In another class in the same school 10% of the students cycle to school and it is also known that 27 of the students in the same class do not cycle to school. How many students are in this class?

_____

_____

8. Given 1 whole unit equals 100%.
   a. What percentage is in 2 whole units?

   _____

   b. What percentage is in $2\frac{1}{2}$ whole units?

   _____

9. Is 40% of €400 greater or less than 0.75 of €200? Give a reason for your answer.

_____

_____

10. If $\frac{Part}{Whole} = \frac{Percentage}{100}$ answer the following questions:
    a. What is 12% of 250?

    _____

    b. 25 is 40% of what?

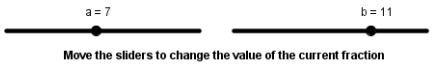
    _____

    c. 72 is what percent of 150?

    _____

<u>Student Activity:</u> To investigate representing Fractions on a Fraction Strip of total length 1 unit

Use in connection with the interactive file, 'Fraction Strip 1 unit', on the Student's CD.



Current fraction $\frac{7}{11}$

All of the following rectangle represents one unit and the green section represents the size of the current fraction

1 unit

Note if no green section shows the fraction is greater than 1

1. Taking 1 box to represent 1 unit, represent the following fractions on the fraction strips below:

   a. $\frac{1}{2}$

   b. $\frac{1}{3}$

   c. $\frac{5}{6}$

   d. $\frac{1}{8}$

   e. $\frac{5}{8}$

2. a. Draw a line to indicate the approximate size of $\frac{3}{8}$ of the chocolate bar opposite.

b. Which would give you more chocolate $\frac{7}{12}$ of this chocolate bar or $\frac{2}{3}$ of this chocolate bar? Explain your answer.

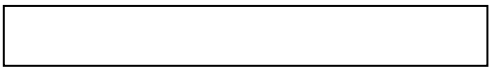
_____

3. Would I get more cake if I was promised $\frac{4}{5}$ of a cake rather than if I was promised $\frac{5}{6}$ of the same cake? Explain your answer.

_____

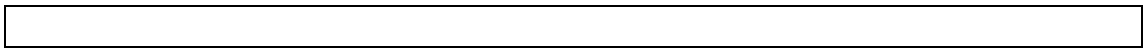
_____

4. The following diagram represents $\frac{3}{4}$ of a garden.



a. Modify the diagram to represent the whole garden.

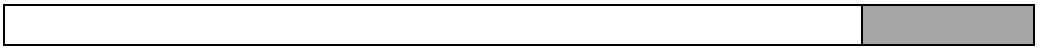
5. Given that this strip represents a cake and I eat $\frac{2}{7}$ of the cake. Show the portion of the cake that is left in this diagram.



6.

a. Estimate what fraction of this strip is shaded.

b. Estimate what fraction of this strip is **not** shaded.



7. Show the approximate height of water in the beaker when the beaker is $\frac{5}{6}$ full.

_____

8. Show the approximate height of water in the beaker when the beaker is $\frac{3}{5}$ full.

_____

9. A concert hall can accommodate 150 people and there are 120 people in the hall, what fraction of the hall is occupied?

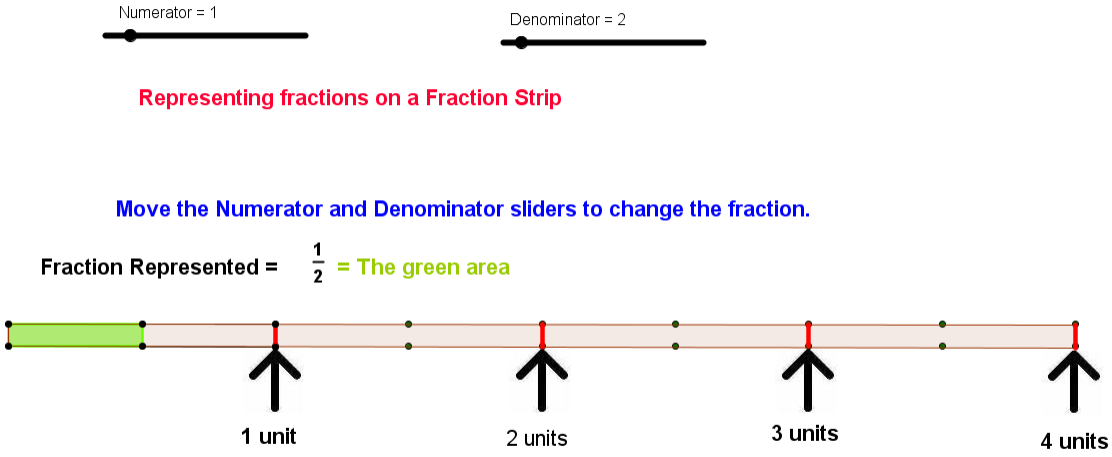
_____

10. A party lasts for 2 hours, what fraction of the time is left given 80 minutes of the party has passed?

_____

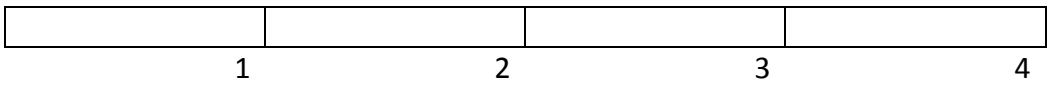
Student Activity: Representing Fractions on a Fraction Strip

Use in connection with the interactive file, 'Fraction Strip', on the Student's CD.

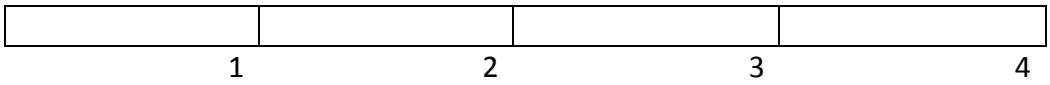


1. Taking 1 box to represent 1 whole unit, 2 boxes to represent 2 whole units and 3 boxes to represent 3 whole units etc., represent the following fractions on the fraction strips below:

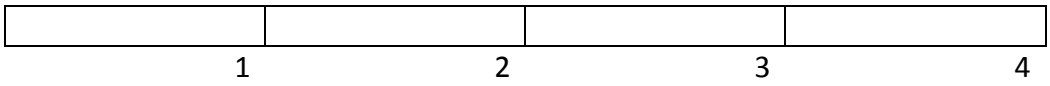
a. $\frac{5}{2}$



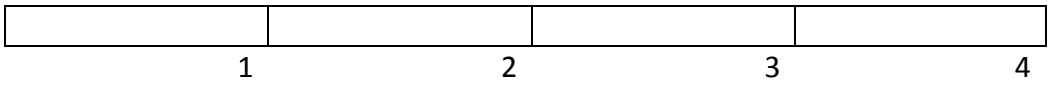
b. $\frac{3}{2}$



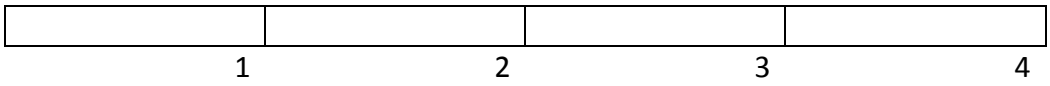
c. $\frac{15}{7}$



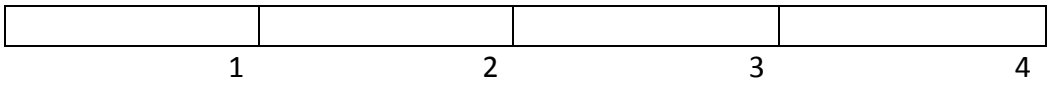
d. $2\frac{1}{6}$



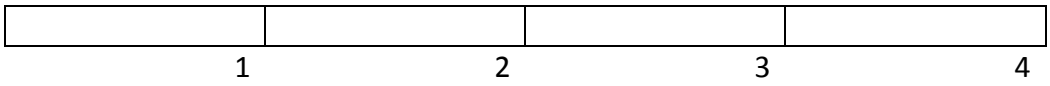
e. $1\frac{1}{4}$



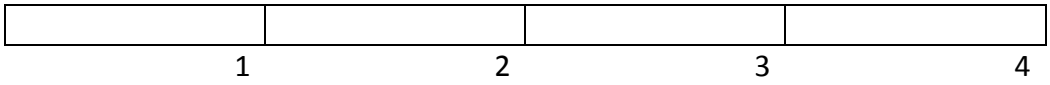
f. $\frac{7}{4}$

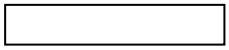


g. $3\frac{1}{5}$



h. $2\frac{2}{5}$



2. If the following rectangular box  represents 1 cake. How would I represent $2\frac{1}{3}$ cakes?

3. In a draw where there is prize money, is half of the prize always the same amount? Explain your answer.

_____

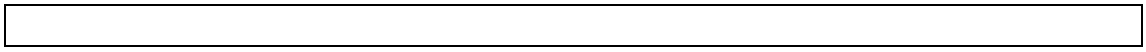
_____

4. Would I get more cake if I was promised $2\frac{4}{5}$ cakes rather than if I was promised $2\frac{5}{6}$ cakes? Explain your answer.

_____

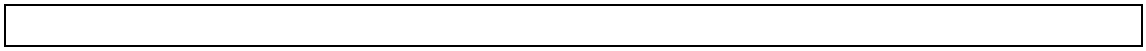
_____

5. The following diagram represents $1\frac{3}{4}$ bars of chocolate.



Show 1 bar of chocolate on the diagram.

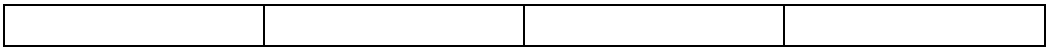
6. Given that this strip represents 3 cakes and I eat $2\frac{2}{5}$ of the cake. Show approximately the portion of the cake that is left in this diagram.



7. Rearrange the following numbers $2\frac{1}{2}, 2\frac{1}{3}, 2\frac{1}{5}, 2\frac{2}{3}, 2\frac{2}{5}$ in order of magnitude putting the smallest first.

_____

8. If the fraction strip below represents 4 units, what is $\frac{1}{2}$ of this fraction strip?



9. Susan read a book containing 450 pages.
   a. Sam only read $\frac{1}{2}$ of this book, how many pages did Sam read?

   _____

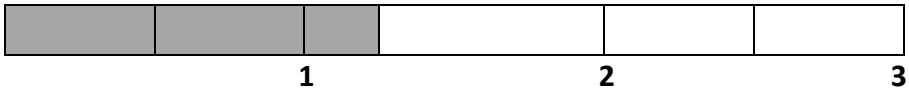
   _____

   b. Joan read $2\frac{1}{2}$ books. They are the same size as Susan's book. How many pages did she read?

   _____

   _____

10. Given that the whole fraction strip below represents 3 units, what number is represented in the shaded part of the fraction strip?



Student Activity: To investigate representing Fractions on a number line

Use in connection with the interactive file, 'fractions on a number line', on the Student's CD.

1. Represent the following fractions on the number lines provided.

$\frac{1}{2}$

$\frac{1}{4}$

$\frac{5}{6}$

$\frac{3}{5}$

$2\frac{1}{2}$

$1\frac{1}{4}$

$4\frac{2}{7}$

$2\frac{1}{5}$

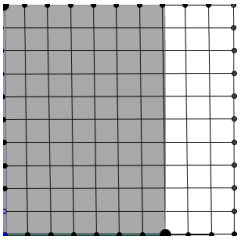
2. Is $2\frac{4}{5}$ greater than or less than $2\frac{5}{8}$? Explain your answer using the number line provided.

3. Gavin eats $2\frac{1}{3}$ chocolate bars and I eat $\frac{7}{8}$ of the same type of chocolate bar. Show the number of chocolate bars we both ate on the number line provided.

<u>Student Activity:</u> To Investigate Fractions, Decimals and Percentages

Use in connection with the interactive file, 'Fractions, Decimals and Percentages', on the Student's CD.

1.



i. How many squares wide and how many squares high is the given diagram?

_____

ii. What fraction of the above diagram is shaded?

_____

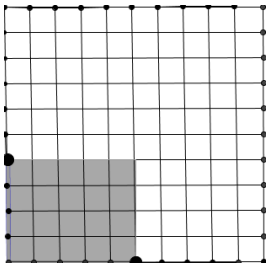
iii. What percentage of the given diagram is shaded?

_____

iv. What decimal value is represented by the shaded region?

_____

2.



i. What fraction of the given 10 X 10 diagram is shaded?

_____

ii. What percentage of the given 10 X 10 diagram is shaded?

_____

iii. What decimal value is represented by the shaded region of the diagram?

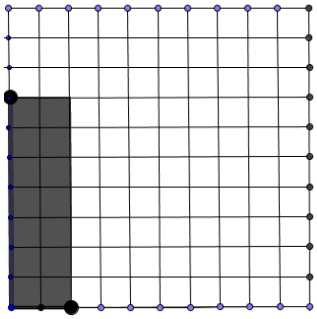
_____

3.

i. What fraction of the given 10 X 10 diagram is shaded?

_____

ii. What percentage of the given 10 X 10 diagram is shaded?



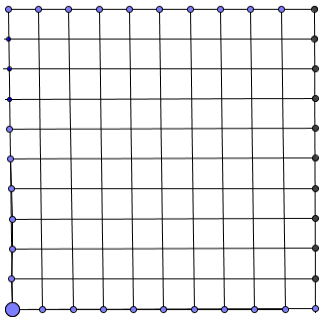
_____

iii. What decimal value is represented by the shaded region of the diagram?

_____

4. In the diagrams below shade in the given fractions. Then write the equivalent decimal and percentage in each case:

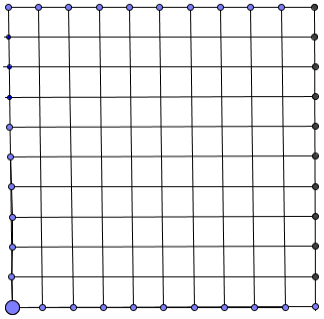
a. $\frac{80}{100}$



Percentage Shaded =

Decimal Value Shaded=

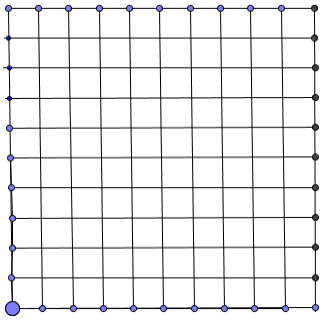
b. $\frac{1}{5}$



Percentage Shaded =

Decimal Value Shaded=

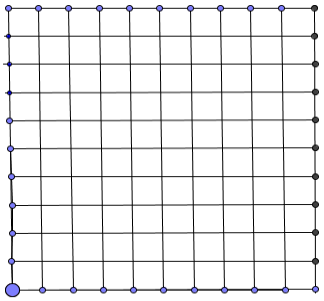
c. $\frac{1}{4}$



Percentage Shaded =

Decimal Value Shaded=

d. $\frac{3}{4}$



Percentage Shaded =

Decimal Value Shaded=

5. Which would be a better prize to win, 21% of a prize fund or $\frac{1}{5}$ of the same prize fund? Explain your answer.

_____

6. Emer got 48 marks out of a total of 50 in a maths examination.
   a. What percentage of the maths examination did she get correct?

   _____

   b. What percentage of the maths examination did she get incorrect?

   _____

   c. What fraction of the maths examination did she get correct?

   _____

   d. What fraction of the maths examination she got incorrect?

   _____

   e. Write the amount of the maths examination she got correct as a decimal.

   _____

7. Which would you prefer to receive 0.7 of a prize or ¾ of the same prize? Explain your choice.

   _____

8. What fraction is 0·8 equal to?

   _____

9. Josephine has eaten 21 sweets out of a bag that contained 25 sweets.

   a. What fraction of the sweets in the bag has she eaten?

   _____

   b. What fraction of the sweets in the bag did Josephine not eat?

   _____

   c. What percentage of the sweets in the bag has she eaten?

   _____

   d. What percentage of the sweets in the bag did Josephine not eat?

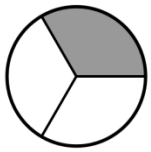
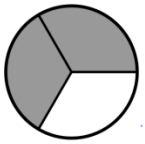
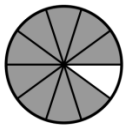
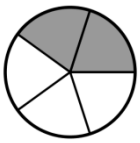
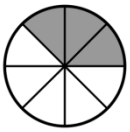
   _____

10. Which is the bigger portion, ½ of a 12 inch pizza, or ¾ of a 9 inch pizza? Give a reason for your answer.

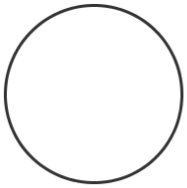
Student Activity: Representing Fractions on a Fraction Circle

Use in connection with the interactive file, 'Fraction circle', on the Student's CD.

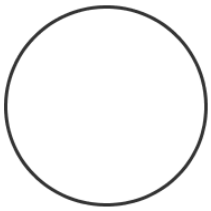
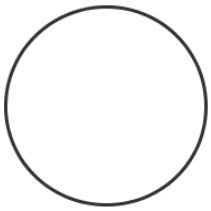
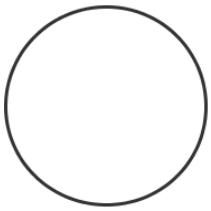
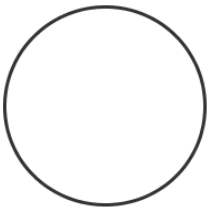
1. Identify the fraction in each of the following fraction circles:

2. Given that the diagram on the right represents a pizza, show approximately $\frac{5}{12}$ of this pizza on the diagram.



3. Represent the following fractions approximately on the fraction circles provided.

$\frac{2}{5}$	$\frac{1}{6}$	$\frac{5}{8}$	$\frac{7}{8}$
			

4. Given 1 circle represents 1 unit, use circles to represent $4\frac{2}{3}$ units

5. Does $\frac{1}{2}$ a pizza always represent the same amount of food? Explain your answer.

_____

6. Explain using fraction circles whether $\frac{4}{5}$ is bigger or smaller than $\frac{5}{6}$.

_____

7. Explain using fraction circles whether $\frac{3}{4}$ is bigger or smaller than $\frac{4}{7}$.

_____

Student Activity: Skip Counting

Use in connection with the interactive file, 'Skip Counting', on the Student's CD.

1. Complete the following table using skip counting with a skip of 2:

0						

2. Complete the following table using skip counting with a skip of 3:

0						

3. Complete the following table using skip counting with a skip of 3:

2						

4. Complete the following table using skip counting with a skip of 2:

5						

5. Complete the following table using skip counting with a skip of -1:

0						

6. Complete the following table using skip counting with a skip of -1:

3						

7. Complete the following table using skip counting with a skip of 3:

-2						

8. Complete the following table using skip counting with a skip of -2:

-2						

9. Starting at 6 how many skips of 3 do I need to get to 24?

   _____

10. Starting at 7 how many skips of 4 do I need until I get a number greater than or equal to 35?

    _____

11. Starting at 5 how many skips of 4 do I need until I get a number greater than 25?

12. Martha is going to do a survey of the 100 houses in her street re the local bus service and she decides to ask every 4^{th} house starting at Number 2.
    a. Which houses will be surveyed?

       _____

    b. If there had been 200 houses in the street, would number153 have been surveyed assuming the same pattern was followed as in part a? Explain your answer.

       _____

13. There are 30 days in April and Declan decides to save €5 every 3^{rd} day starting on the 4^{th} day of the month. How much money will he have in total at the end of the month?

<u>Student Activity:</u> To investigate the Lowest Common Multiple and Highest Common Factor

Use in connection with the interactive file, 'LCM and HCF', in the Student's CD.

Note: LCM= Lowest (Least) Common Multiple and HCF = Highest Common Factor.

1. Find the HCF of each of the following pairs of numbers:

Number 1	Number 2	Highest Common Factor
6	8	
5	10	
14	21	
22	24	
5	30	
12	30	
12	13	

2. Find the LCM of each of the following pairs of numbers:

Number 1	Number 2	Lowest Common Multiple
3	7	
5	10	
6	8	
10	12	
4	12	
4	13	
7	15	

3. Find the LCM of each of the following pairs of numbers:

Number 1	Number 2	Lowest Common Multiple
8	15	
7	12	
6	20	
10	17	
14	18	
14	7	
7	14	

4. Check your answers for questions 1, 2 and 3 using the interactive file.

   _____

5. What do the letters HCF and LCM stand for?

   HCF_____

   LCM_____

6. Explain in your own words what is meant by the Highest Common Factor.

_____

_____

7. Explain in your own words what is meant by the Lowest Common Multiple.

_____

_____

8. Bus A arrives at a bus stop every 10 minutes. Bus B arrives at the same bus stop every 25 minutes. If both buses arrive at the bus stop at 8 am, at what time will these two buses arrive at this bus stop again at the same time? Explain how you arrived at this answer.

_____

_____

_____

_____

9. Two lighthouses can be seen from a harbour. The first flashes every 8 seconds and the second flashes every 15 seconds. If they both flashed at 12 midnight at what time will they both flash at the same time again? Explain how you arrived at this answer.

_____

_____

_____

_____

10. Three bells ring together. Bell A rings every 2 seconds, Bell B rings every 4 seconds and Bell C rings every 6 seconds.
    a) If they all rang together at midday, how long will it be until they all ring together again? Explain how you arrived at this answer.

    _____

    _____

    b) In one hour, how many times do all the bells ring together?

    _____

    _____

11. A factory needs two parts to make a machine, part A and part B. Part A comes in boxes of 24 and Part B comes in boxes of 18. How many machines should the factory owner make to ensure no parts are left over?

_____

_____

_____

12. The front wheel of a bicycle A has a circumference of 140 centimetres and the front wheel of bicycle B has a circumference of 90 centimetres.
    a. Given that a point on the front wheel of bicycle A and a point on the front wheel of bicycle B are both touching the ground when Jonathan starts his journey at 9 am, when will both these points touch the ground at the same time again? Explain how you arrived at this answer.

    _____

    _____

    b. If the tyres are made of the same kind of material, which tyre will last the longest? Explain how you arrived at this answer.

    _____

    _____

13. Find the Highest Common Factor of 24 and 28 and use it to simplify the fraction $\frac{24}{28}$.

_____

_____

14. Jeff and Jordan start running around a circular track. It takes Jeff 20 minutes to complete one lap of the track and it takes Jordan 25 minutes to complete one lap of the track. How long will it be until both are together again at the starting point? Explain how you arrived at this answer.

_____

_____

15. Noelle visits her granny every 5 days and her cousin Martha visits every 4 days. Both visited their granny on 1st March. How many days will have passed before they both visit their granny again on the same day?

_____

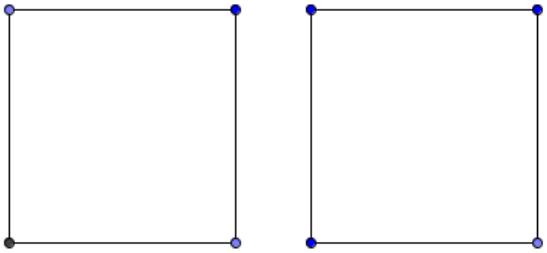
_____

Student Activity: To investigate multiplication of Fractions

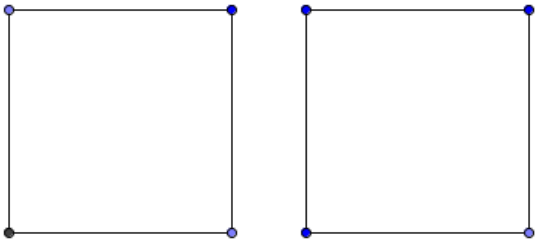
Use in connection with the interactive file, 'Multiplication of Fractions', on the Students CD.

1. (a) Using a ruler and pencil, mark off $\frac{3}{4}$ of the first rectangle and $\frac{1}{5}$ of the second rectangle and imagine the rectangles move over each other to calculate $\frac{1}{5}$ of $\frac{3}{4}$.

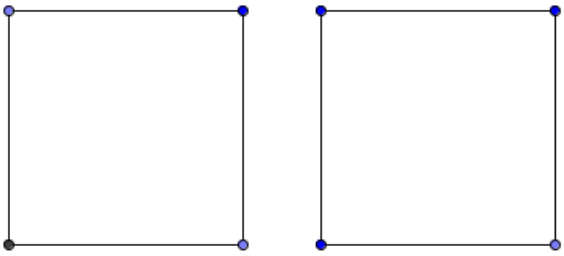
a.



b. Mark off $\frac{1}{5}$ of the first rectangle and $\frac{3}{4}$ of the second rectangle and imagine the rectangles move over each other to calculate $\frac{3}{4}$ of $\frac{1}{5}$. What do you notice?

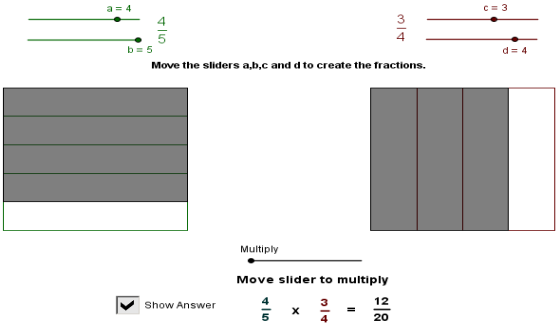


c. Mark off $\frac{2}{3}$ of the first rectangle and $\frac{3}{5}$ of the second rectangle and imagine the rectangles move over each other to calculate $\frac{3}{5}$ of $\frac{2}{3}$.



2. Using the interactive file, multiplication of fractions, illustrated below using the example 4/5 by 3/4, answer the following questions:

a.



b. Multiply $\frac{1}{4}$ by $\frac{3}{5}$.

c. Multiply $\frac{1}{2}$ by $\frac{5}{6}$.

d. Is getting $\frac{1}{2}$ of $\frac{3}{4}$ the same as multiplying $\frac{1}{2}$ by $\frac{3}{4}$? Explain your answer.

_____

e. Explain how you multiply fractions

_____

3. Brian ate $\frac{4}{5}$ of his bag of sweets and then gave $\frac{1}{4}$ of the reminder to his sister.

a. What fraction of the whole bag does his sister get?

_____

b. What fraction of the whole bag is now left?

_____

c. Predict what you would get if you add the fraction of sweets in the bag that Brian ate, the fraction that his sister got and the fraction that Brian has left over.

_____

d. Now do the calculation. Explain what your answer means in the context of the sweets.

_____

_____

4. Vicky spent $\frac{5}{6}$ of her savings on clothes and then spent $\frac{1}{3}$ of the remainder on books.

a. What fraction of her savings did she spend on books?

_____

b. What fraction of her original savings has she now?

_____

c. If her total savings were 54 euro, how much has she left?

Estimation Quiz

1. Round off 475 to the nearest 100.
   A. 500

   B. 400

   C. 450

2. Round off 475 to the nearest 10.
   A. 470

   B. 480

3. Round of 447 to the nearest 100
   A. 500

   B. 400

4. Round off 2145 to the nearest 100.
   A. 2100

   B. 2200

5. Estimate 1.14 + 5.4 + 3.6 + 0.87
   A. 10

   B. 11

   C. 12

6. Estimate .68 X 299.
   A. 200

   B. 100

   C. 210

7. If there are on average 9 words in a line of a particular novel and 30 lines in a page, estimate the number of words in the 29 pages of this novel.
   A. 2700

   B. 270

   C. 8100

8. Estimate (348 X 2.09) / 19.8
   A. 150

   B. 35 C. 350

9. The maximum loading in a lift is 300kgs. If there are 6 people in the lift and their weights are as follows: 34.5 Kg, 39.7 Kg, 24.8 Kg, 85 Kg, 56.2 Kg and 44 Kg. Estimate whether the lift is overloaded.
   A. Yes B. No

10. The weight of a piece of fruit is 245.653 by a very precise measuring scale, what is the weight of the piece of fruit to the nearest .01 of a gram?
   A. 245.65
   B. 24565
   C. 245.66

11. The weight of sweets in a packet is 200grams to the nearest 10 grams. Which of the following could not be the actual weight of sweets in the packet?
   A. 204
   B. 197
   C. 195
   D. 205

12. The population of a local town is 8745, write this figure correct to 3 significant figures.
   A. 7450
   B. 8750
   C. 8740

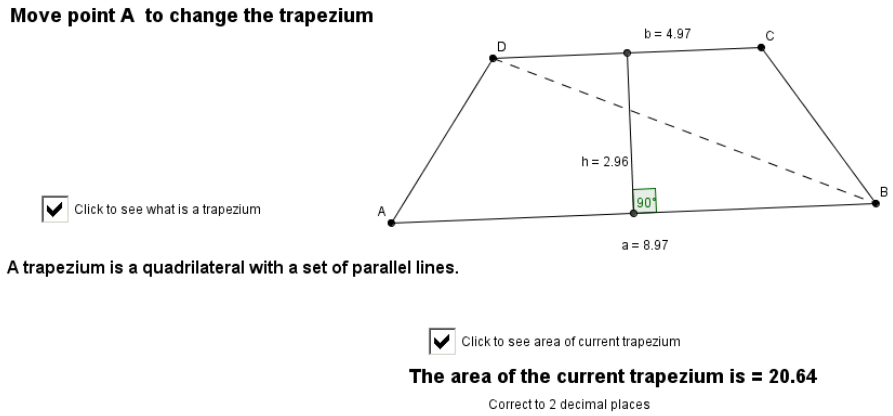
13. 38 people are invited to a party and the host needs 1 cup, 2 plates, 1 knife, 1 fork, 1 spoon and a napkin for each person. Estimate which of the following the person hosting the party should buy.
   A. 250 pieces of mixed cups, plates etc.
   B. 280 pieces of mixed cups, plates etc.
   C. 180 pieces of mixed cups, plates etc.

14. A rectangular solid is 19.5 cm wide, 24.9 cm long and 20.1 cm high, which of the following is the best estimate of the volume?
   A. 1000 B. 100 C. 10000

15. Estimate the cost of inviting 200 people to a party if the cost per person is €24.99.
   A. 1000
   B. 4000
   C. 5000

Student Activity: To investigate trapeziums

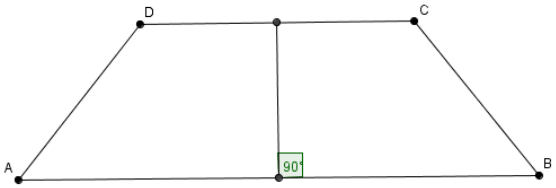
Use in connection with the Interactive file, 'trapezium', on the Student's CD.



1. What is meant by a trapezium? (See interactive file if necessary.)

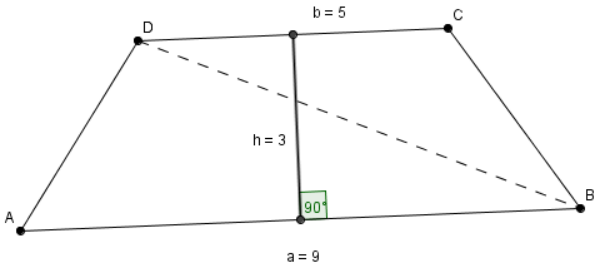
_____

2. Which sides of the trapezium below are parallel?



_____

3.



a. What is the perpendicular height of the triangle *ABD*? _____

b. What is the area of the triangle *ABD*? Show your calculations.

_____

_____

c. What is the perpendicular height of the triangle *BCD*? _____

d. What is the area of the triangle *BCD*? Show your calculations.

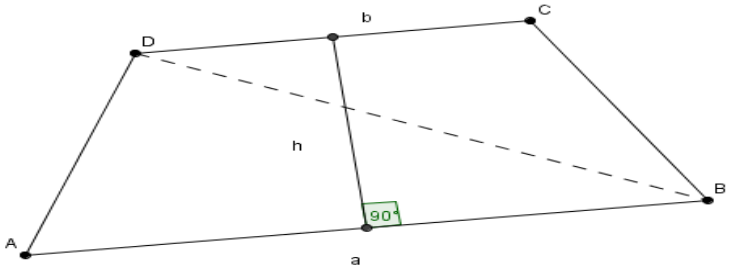
_____

_____

e. Hence, what is the area of trapezium *ABCD*? Show your calculations.

_____

4.



a. Find the area of the trapezium *ABCD* in terms of a, b and h. Show your calculations.

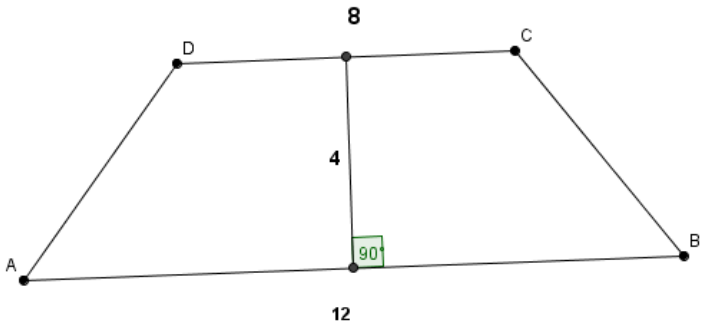
_____

_____

b. Is the formula you got in **a** above true for all trapeziums?

_____

5.

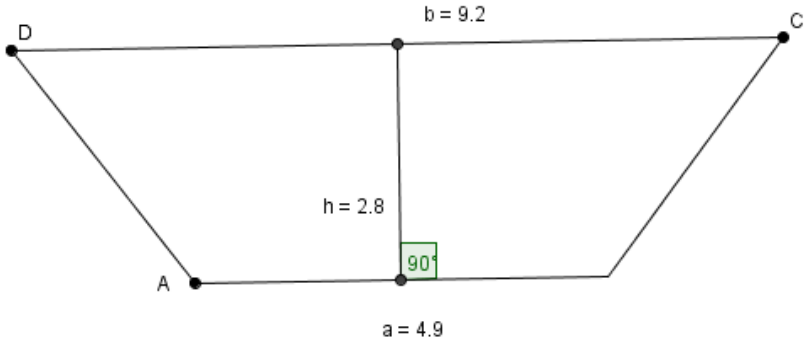


Find the area of the trapezium *ABCD* represented in the above diagram. Show your calculations.

_____

_____

6.

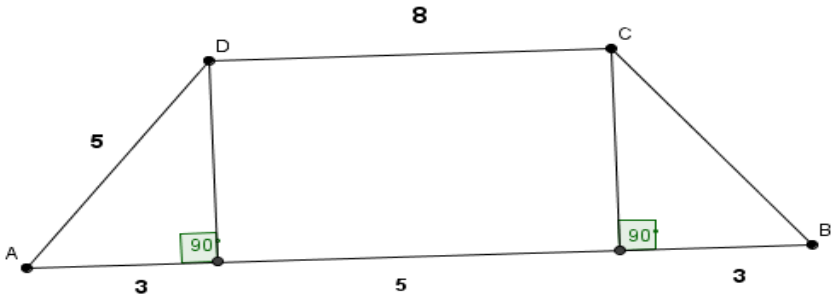


Find the area of the trapezium *ABCD* represented in the above diagram. Show your calculations.

_____

_____

7.



a. Find the area of the trapezium represented in the above diagram. Show your calculations.

_____

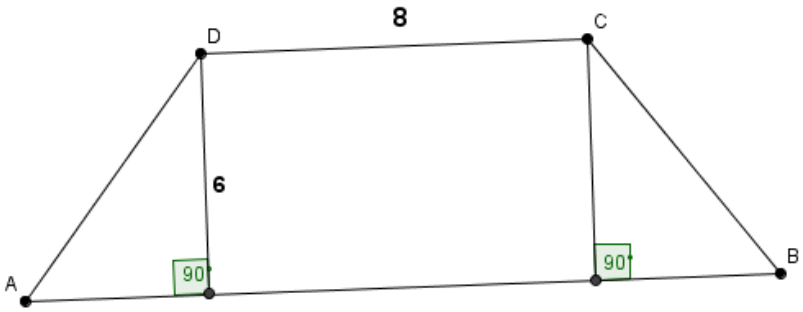
_____

b. Find the perimeter of the above trapezium. Show your calculations.

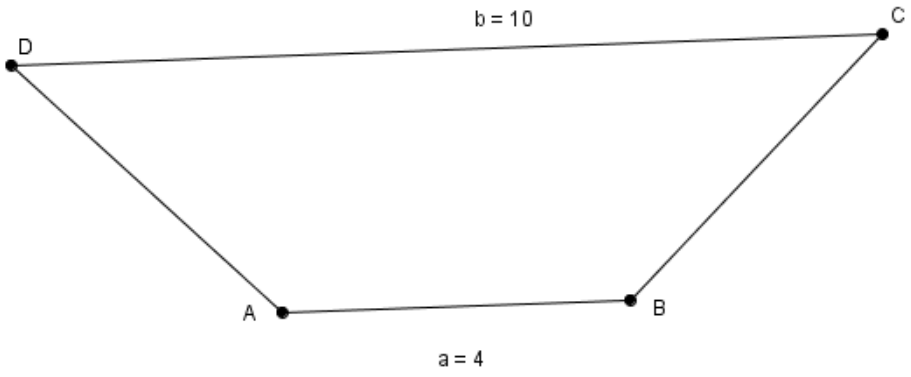
_____

_____

8. A trapezium of the following shape is to be cut from a piece of material. What is the area of material that will be required and how much material will be wasted?



9. Find the perpendicular height of the following trapezium given the area is 20.8 cms^2.



10. If you found a rubbish skip, with no lid, whose sides are in the shapes of trapeziums, what lengths would you need to measure to get the surface area of the skip?

_____

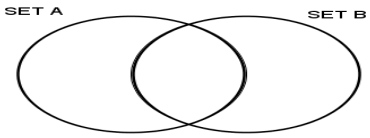
_____

<u>Student Activity</u>: To investigate 2 Venn Diagrams

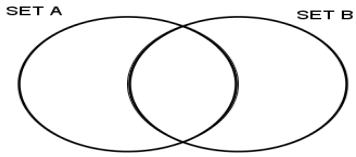
Use in connection with the interactive file, 'Venn Diagrams', on the Student's CD.

<u>Note A^c = A'.</u>

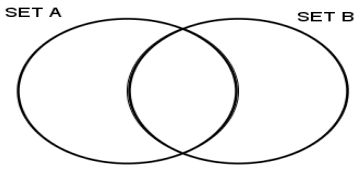
1. In the diagram below, shade in the area that represents the set A.



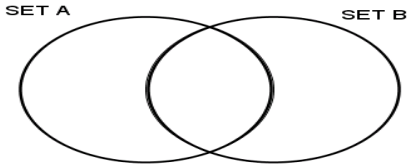
2. In the diagram below, shade in the area that represents the set B.



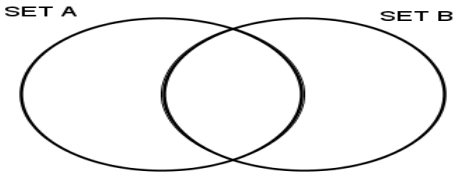
3. In the diagram below, shade in the area that represents A $\cap$ B.



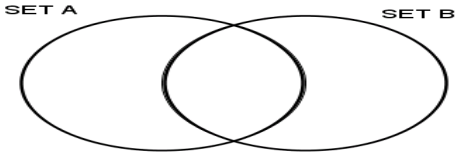
4. In the diagram below, shade in the area that represents A U B.



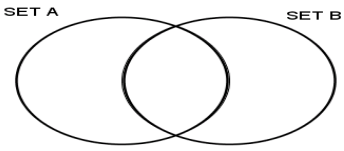
5. In the diagram below, shade in the area that represents A^c.



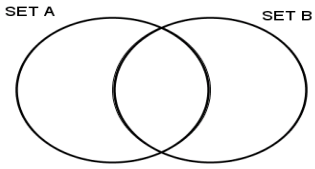
6. In the diagram below, shade in the area that represents B^c.



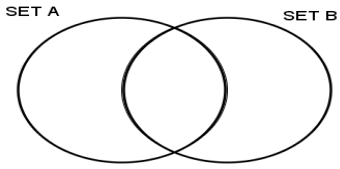
7. In the diagram below, shade in the area that represents $(A \cup B)^c$.



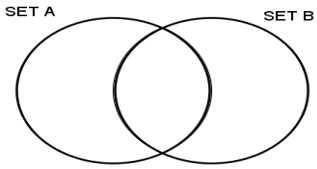
8. In the diagram below, shade in the area that represents $(A \cap B)^c$.



9. In the diagram below, shade in the area that represents $(A \setminus B)$.



10. In the diagram below, shade in the area that represents $(B \setminus A)$.



Now check your answers using the interactive file, 'Venn Diagrams', on the Student's CD.

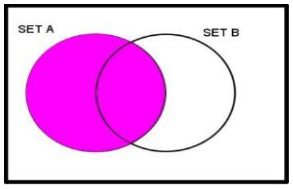
11. Does A\B differ from B\A? Explain your answer with the help of Venn Diagrams.

12. Does $(A \cap B)$ differ from $(B \cap A)$? Explain your answer with the help of Venn Diagrams.

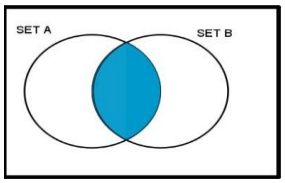
13. Does (A U B) differ from (B U A)? Explain your answer with the help of Venn Diagrams.

14. Do A and A^c ever have any elements in common? Explain your answer with the help of Venn Diagrams.

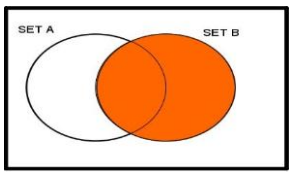
Venn Diagrams Quiz



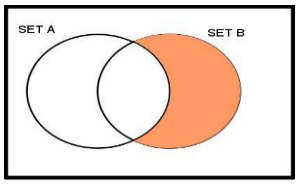
1. What does the coloured part of this diagram represent?
   A. $A \cap B$
   B. A
   C. B
   D. $A \cup B$



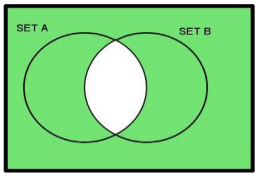
2. What does the coloured part of this diagram represent?
   A. A
   B. $A \cap B$
   C. $A \cup B$



3. What does the coloured part of this diagram represent?
   A. $A \cup B$
   B. $A \cap B$
   C. A
   D. B



4. What does the coloured part of this diagram represent?
   A. A
   B. $A \cup B$
   C. $B \setminus A$
   D. $A \cap B$



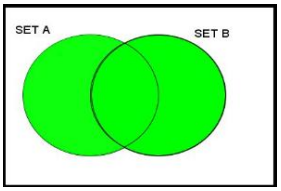
5. What does the coloured part of this diagram represent?

   A. $A \cup B$

   B. $A \cap B$

   C. $(A \cap B)^{C}$

   D. $B \setminus A$



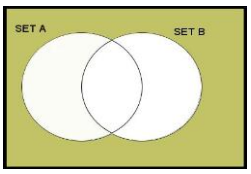
6. What does the coloured part of this diagram represent?

   A. $B \setminus A$

   B. U the universal set.

   C. $A \cap B$

   D. $B \cup A$



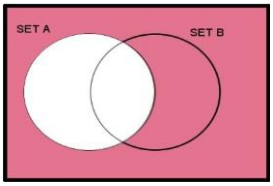
7. What does the coloured part of this diagram represent?

   A. $(A \cup B)^{C}$

   B. $A \cup B$

   C. $A \cap B$

   D. U the universal set.



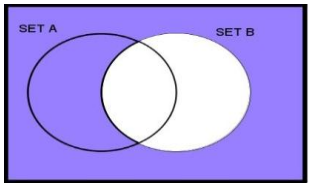
8. What does the coloured part of this diagram represent?

   A. A

   B. $A \cap B$

   C. A^{C}

   D. U the universal set.



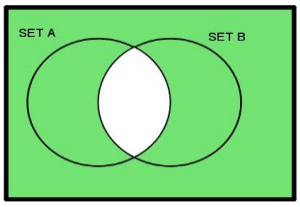
9. What does the coloured part of this diagram represent?

   A. B^{C}

   B. A

   C. $A \cup B$

   D. B



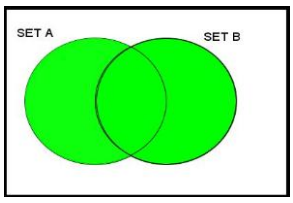
10. What does the coloured part of this diagram represent?

   A. $B \cap A$

   B. $B \setminus A$

   C. $(B \cap A)^{C}$

   D. $B \cup A$



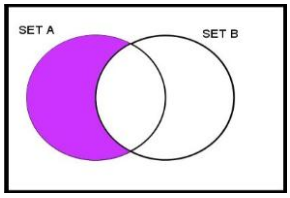
11. What does the coloured part of this diagram represent?

   A. $B \cup A$

   B. $A \setminus B$

   C. $(B \cap A)^{C}$

   D. U the universal set.



12. What does the coloured part of this diagram represent?

   A. $A \setminus B$

   B. $A \cup B$

   C. $B \setminus A$

13. When is $A \cap B = B \cap A$?

A. Always

B. Sometimes

C. Never

14. When is $B \cup A = B \cup A$?

A. Never

B. Always

C. Sometimes

15. When is $A \setminus B = B \setminus A$?

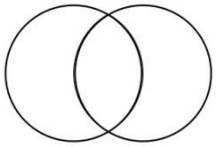
A. Never

B. Sometimes

C. Always

Sets Quiz 1

1. What is this type of diagram called?



   A. Venn

   B. Circle

2. What is the cardinal number of the set {coke, fanta, sprite}

   A. 3

   B. 1

   C. 4

3. If set A equals the people in your class and set B equals the people in your class who wear glasses. What is meant by A $\cap$ B?

   A. All the people in your class.

   B. The people in your class who wear glasses.

   C. The people in your class who do not wear glasses.

4. If set A equals the people in your class and set B equals the people in your class who wear glasses. What is meant by A $\cup$ B?

   A. All the people in your class.

   B. The people in your class who wear glasses.

   C. The people in your class who do not wear glasses.

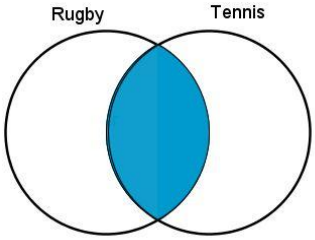
5. If set A equals the people in your class and set B equals the people in your class who wear glasses. What is meant by A \ B?

   A. All the people in your class.

   B. The people in your class who wear glasses.

   C. The people in your class who do not wear glasses.

6. In a class of 80 students, there are 60 students who play rugby and 35 who play tennis. What number would go in the coloured section of this diagram, if it is known all students play either rugby, tennis or both these games?

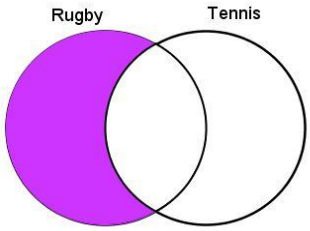


A. 95

B. 80

C. 15

7. In a class of 80 students, there are 60 students who play rugby and 35 who play tennis. What number would go in the coloured section of this diagram, if it is known all students play either rugby, tennis or both these games?

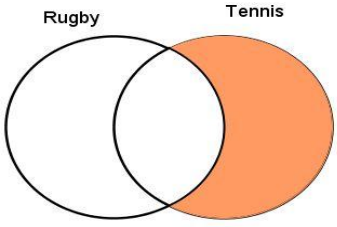


A. 45

B. 60

C. 80

8. In a class of 80 students, there are 60 students who play rugby and 35 who play tennis. What number would go in the coloured section of this diagram, if it is known all students play either rugby, tennis or both these games?



A. 35

B. 20

C. 95

9. If A represents the Natural numbers less than 20 and B represents the even numbers less than 20, what is A $\cap$ B?
   A. $\varnothing$
   B. {2,4,6,8,10,12,14,16,18}
   C. {2,4,6,8,10,12,14,16,18, 20}

10. If A represents the Natural numbers less than 20 and B represents the even numbers less than 20, what is A \ B?
   A. {1,3,5,7,9,11,13,15,17,19}
   B. {2,4,6,8,10,12,14,16,18}
   C. {2,4,6,8,10,12,14,16,18, 20}

11. If A represents the Natural numbers less than 20 and B represents the even numbers less than 20, what is B \ A?
   A. $\varnothing$
   B. {2,4,6,8,10,12,14,16.18}
   C. {1,3,5,7,9,11,13,15,17,19}

12. If there were only 3 types of music in the world pop, rock and rap and set A equals all the people in the world who prefer pop music, what is A^{C}?
   A. The people in the world who prefer pop music?
   B. The people in the world who prefer rock music?
   C. The people in the world who do not prefer pop music.

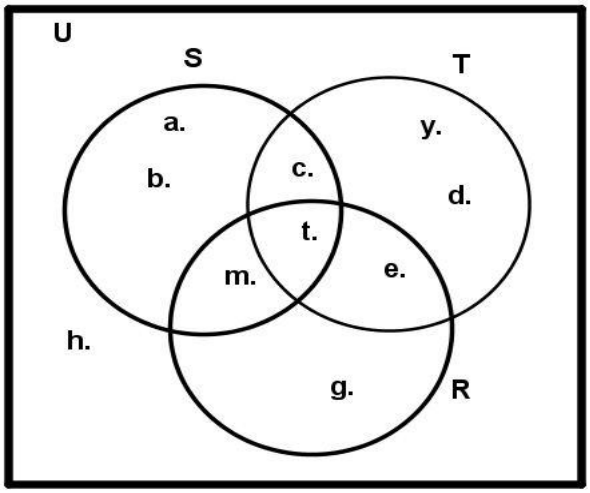
13. Set A is all the companies in Ireland that provide internet access. What would need to happen for a company called Game who currently does not provide internet access to become a member of set A?
   A. Game will never be a member of set A.
   B. Game would need to become an internet provider.
   C. A is already a member

14. Set A equals {1,2,3,4} and set B equals {2,5}. Is set B $\subset$ A?
   A. Yes
   B. No

15. U, the universal set, is {1,2, 3, 4,5} and the set A is {1,2}. What is A^{C}?
   A. {3,4,5}
   B. {1,2,3,4,5}
   C. {1,2}

Sets Quiz 2

1.



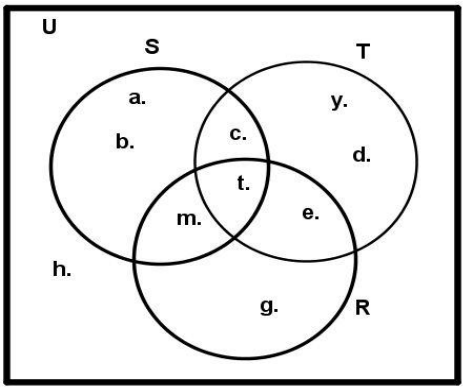
1. What is S ∩ T?

   A. {c, t}

   B. {c}

   C. {a, b, c, t, y, d}

   D. {t}

2. 

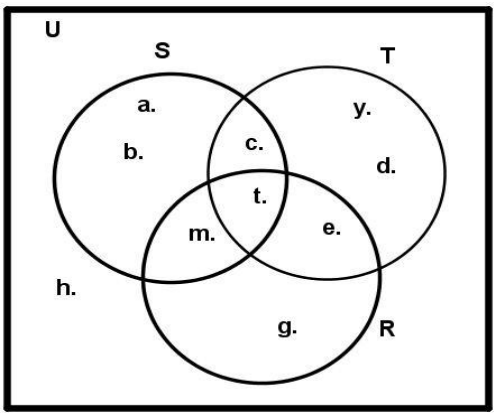
   What is S ∪ R?

   A. {a, b, c, t, m}

   B. {a, b, c, t, m, g, e}

   C. {m, t}

   D. ? {c, t}

3. 

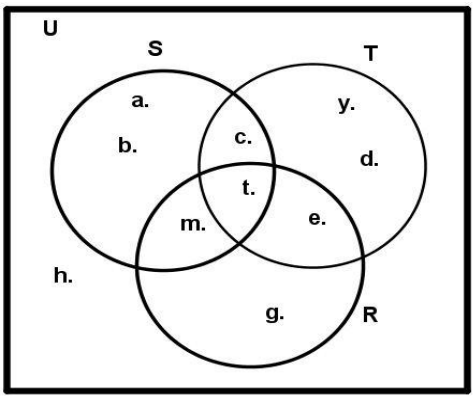
What is S ∩ T ∩ R?

A. {m, t, e}

B. {t}

C. {m, t, c}

D. ∅

4. 

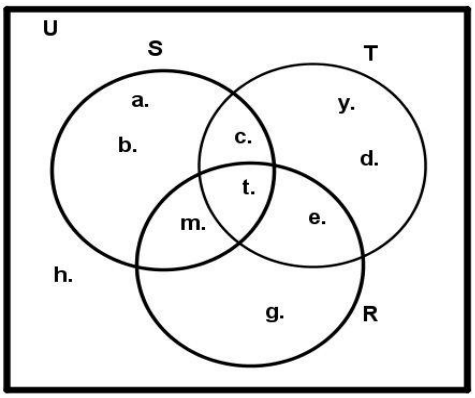
What is S ∪ T ∪ R?

A. {t}

B. {a, b, c, y, d, m, t, e, g}

C. {a, b, c, y, d, m, t, e, g, h}

D. {c, t, m, e}

5. 

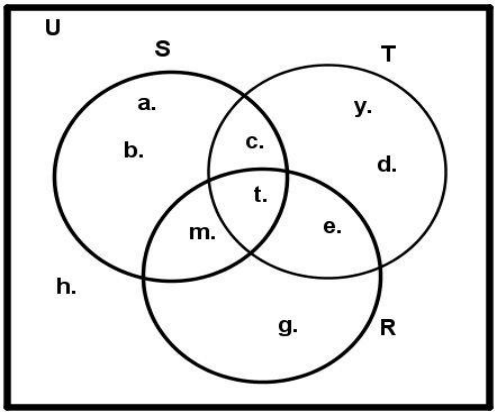
What is S\T?

A. {c, t}

B. {a, d, c, m, t}

C. {a, b, m}

D. {a, b}

6. 

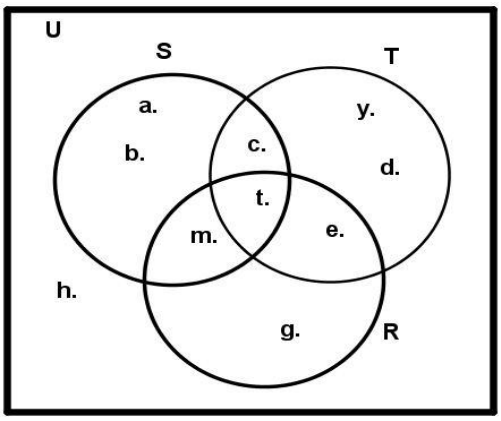
What is $(S \cup T) \cap R$?

A. {m, t, e}

B. {a, b, c, y, d, m, t, e}

C. {t}

D. {m, t, e, c}

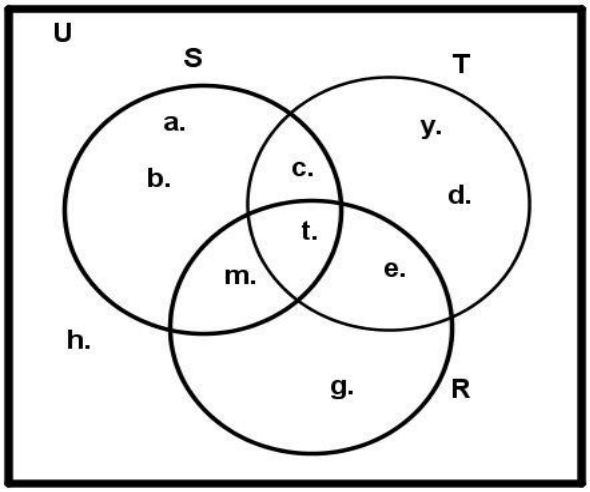
7. 

List the elements in the universal set.

A. {t}

B. {a, b, c, y, d, m, t, e, g}

C. {a, b, c, y, d, m, t, e, g, h}

8. 

What is T \ R?

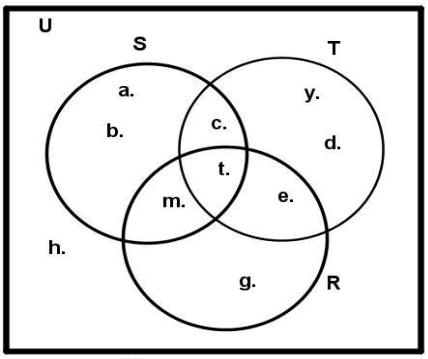
A. {c, y, d}

B. {m, t, e}

C. {c}

D. {m, g}

9.



What is T^{C}?

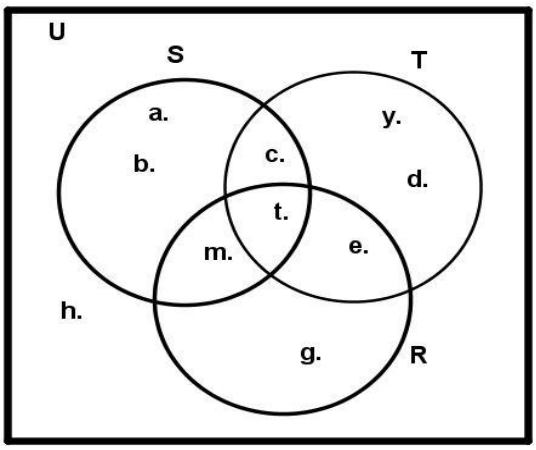
A. {c, d, e, y, t}

B. {y, d}

C. {a, b, m, g}

D. {a, b, m, g , h}

10.



What is $R \setminus (S \cap T)$?

A. {m, g, e}

B. {g}

C. {t}

D. {c}

Student Activity: To investigate $a^p .a^q$

Use in connection with the interactive file, '$a^p .a^q$', on the Student's CD.

1.

a. Write 2 x 2 x 2 x 2 x 2 in the form 2^n.

_____

b. Write 2 x 2 x 2 x 2 in the form 2^m.

_____

c. Using your answers from part a and b, write 2^n x 2^m as 2 x 2 x 2 etc. How many 2 s are there now?

_____

d. Do you notice any relationship between the number of 2 s there are in part c above and the number of 2 s there were in parts a and b in this question?

_____

2.

a. Write 2 x 2 x 2 x 2 x 2 x 2 in the form 2^a.

_____

b. Write 2 x 2 x 2 x 2 x 2 in the form 2^b.

_____

c. Using your answers from part a and b, write 2^a x 2^b as 2 x 2 x 2 etc. How many 2 s are there now?

_____

d. Using your answers from part a and b, do you notice any relationship between the number of 2 s there are in part c of this question and the number of 2 s there were in parts a and b in this question?

_____

3.

a. Write 3^2 x 3^3 in the form 3^n. Explain how you got your answer.

_____

b. Write 4^2 x 4^3 in the form 4^n. Explain how you got your answer.

_____

c. Write a^6 x a^4 in the form a^m. Explain how you got your answer.

_____

d. Under what circumstances can the above rule apply to $a^6 \times b^4$?

_____

4. Can the above rule be applied to the following situation $2^p \times 3^q$? Explain your answer.

_____

5.

a. If $3^p \times 3^4 = 3^7$, find p.

_____

b. If $a^6 \times a^4 = 2^{10}$, find a.

_____

6.

a. For what values of a is $a^6 \times a^4 = a^{10}$?

_____

b. For what value of q is $a^6 \times a^q = a^{10}$, $q \in Z$?

_____

7. When examining 2^6, is it 2 or 6 that is the index?

_____

8. Why in general is $a^p + a^4 \neq a^7$?

_____

9. Why does $5^0 \times a^p$ always equal to a^p?

_____

10. Write $\sqrt{2}$ in the form $2^{n.}$

_____

11. If $m = 2^{\frac{1}{2}}$, what is m^2?

_____

12. Given $(1+x)^4 = 16$. Calculate the value of x.

_____

13. Given $(1+x)^4 = 81$. Calculate the value of x.

_____

Student Activity: To investigate $a^p \div a^q$

Use in connection with the interactive file, '$a^p \div a^q$', on the Student's CD.

1.

a. Write 2 x 2 x 2 x 2 x 2 in the form 2^n.

_____

b. Write 2 x 2 in the form 2^m.

_____

c. Using your answers from parts a and b, write $\frac{2^n}{2^m}$ and cancel where appropriate. How many 2 s are there now?

_____

d. Do you notice any relationship between the number of 2 s there are in part c and the number of 2 s there were in parts a and b of this question?

_____

2.

a. Write 2 x 2 x 2 x 2 x 2 x 2 in the form 2^a.

_____

b. Write 2 x 2 x 2 x 2 x 2 in the form 2^b.

_____

c. Using your answers from parts a and b, write $2^a \div 2^b$ as $\frac{2^a}{2^b}$ and cancel where appropriate. How many 2 s are there now?

_____

d. Using your answers from parts a and b, do you notice any relationship between the number of 2 s there are in part c of this question and the number of 2 s there were in parts a and b in this question?

_____

3.

a. Write $3^2 \div 3^3$ in the form 3^n. Explain how you got your answer.

_____

b. Write $4^2 \div 4^3$ in the form 4^n. Explain how you got your answer.

_____

c. Write $a^6 \div a^4$ in the form a^m. Explain how you got your answer.

_____

4. Can the above rule be applied to the following situation $2^p \div 3^q$. Explain your answer.

_____

5.

a. If $3^p \div 3^4 = 3^7$, find the value of p.

_____

b. If $a^6 \div a^4 = 2^2$, find the value of a.

_____

c. Is $a^6 \div a^4 = a^2$ for all values of a? Try different values of a, to enable you to come to your conclusion.

_____

d. For what value of q is $a^{12} \div a^q = a^{10}$, $q \in Z$?

_____

6. In the expression 3^6, what name is given to the 6?

_____

7. When is $a^p \div a^4 = a^9$? Are there any other values of q for which the statement is true?

_____

8. Why does $5^0 \div a^p$ always equal a^{-p}?

_____

9. Write $\sqrt{2}$ in the form $2^{n.}$

_____

10. Write $\frac{1}{\sqrt{2}}$ in the form $2^{b.}$

_____

11. State in your own words a rule for dividing numbers written in index form.

_____

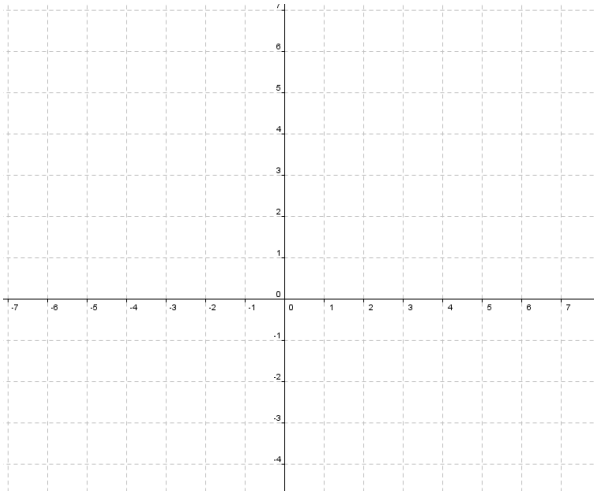
Student Activity: Two to the power of n

Use in connection with the interactive file, 'Two to the power of n', on the Student's CD.

1.

a. Complete the following table and represent the data on the graph:

x	2^x
3	
2	
1	
0	
-1	
-2	
-3	



b. Describe the shape of the graph for values of x less than 0. Does it ever cut the x axis?

_____

2. Multiply $2^{½}$ by 2. Write this in the form 2^n. Hence explain why the value of $2^{1\frac{1}{2}}$ must be double $2^{\frac{1}{2}}$. Does the graph in the interactive file support this correct to two decimal places?

_____

_____

3. Multiply $2^{1½}$ by 2. Write this in the form 2^n. Hence explain why the value of $2^{2\frac{1}{2}}$ must be double $2^{1\frac{1}{2}}$. Does the graph in the interactive file support this correct to three decimal places?_____

_____

4. If m= $2^{\frac{1}{2}}$, what is m^2?

_____

_____

5. If t= $2^{\frac{1}{3}}$, what is t^3?

_____

Net of a Cube

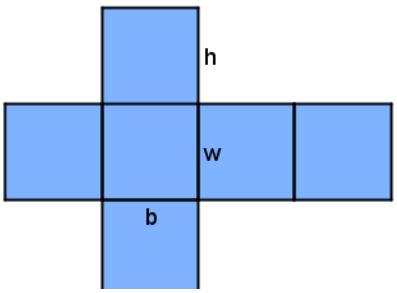
s = 3

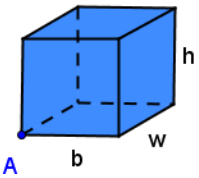
Click Tick Box to show formulae

☑ Tick Box

$$\text{Surface Area} = 2(bw) + 2(hw) + 2(bh)$$

$$\text{Volume} = b \times w \times h$$



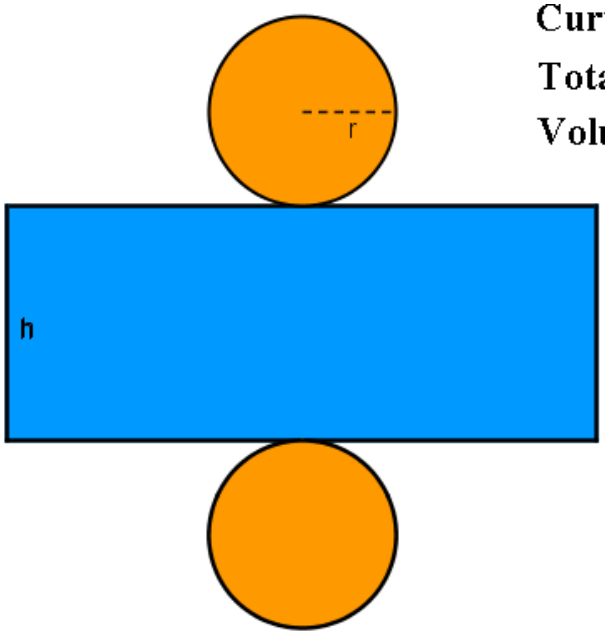


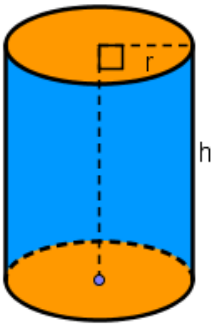
Net of a Cylinder

$$\text{Curved Surface Area} = 2\pi rh$$

$$\text{Total Surface Area} = 2\pi rh + 2\pi r^2$$

$$\text{Volume} = \pi r^2 h$$



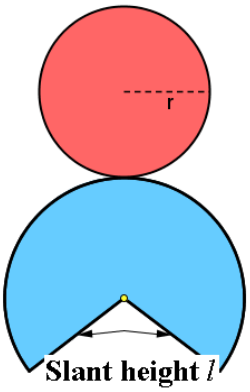


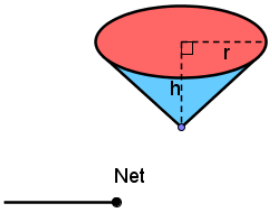
Net of a cone

Curved Surface Area = πrl

Total Surface Area = Curved Surface Area + Area of Base

Total Surface Area = $\pi rl + \pi r^2$





Net of a pyramid