

NECT
GRADES 4-9 MATHEMATICS
TRAINING HANDOUT
TERM 3&4 2018

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TRAINING PROGRAMME

- Welcome to the Term 3 & 4 training!
- Please go through this programme with your trainer to see which activities will be done.

	TIME	ACTIVITY	TRAINER WORKSHOP	TEACHER WORKSHOP
1	30 minutes	Welcome, housekeeping and updates		
2	30 minutes	Pre-test		
3	30 minutes	Guidelines for facilitators and participants		
4	1 hour	Introductions, reflections and agenda		
5	2 hours 30 minutes	Number sentences (Gr 4 – 6) and Algebraic Equations (Gr 7 – 9)		
6	2 hours	2D shapes (Gr 4 – 7) and Theorem of Pythagoras (Gr 8 – 9)		
7	2 hours	Probability (Gr 4 – 9)		
8a	30 minutes	Selection of topics and preparation for participant presentations		
8b	6 hours 30 minutes	Presentations		
9	2 hours	Orientation to the trainer's guide		
10	30 minutes	Final questions and answers		
11	30 minutes	Post test		
12	30 minutes	Training of teachers: planning session		
13	30 minutes	Closure and evaluation		

NUMBER SENTENCES (GR 4-6) AND ALGEBRAIC EQUATIONS (GR 7-9)

PROGRESSION OF THE TEACHER GUIDELINES AND CLARIFICATION NOTES FOR THE TOPIC ACROSS GRADES AND PHASES

For learners to understand algebraic expressions and equations in the Senior Phase, they need to understand number sentences in the Intermediate Phase. To simplify algebraic expressions, the concepts of factors and multiples must be well understood; and learners are required to represent patterns, problem situations and functions in various forms like tables, formulae, number sentences, algebraic expressions and equations and graphs.

INTERMEDIATE PHASE			SENIOR PHASE		
Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9
NUMBER SENTENCES CAPS 2.1 p. 39 CAPS 2.3 p. 102 (see also 1.1 p. 53 and 2.2 p. 80) <i>Term 3: 3 hours</i>	NUMBER SENTENCES CAPS 2.1 p. 127 CAPS 2.3 p. 207 (see also 1.1 p. 141 and 2.2 p. 169) <i>Term 1: 4 hours</i> <i>Term 4: 3 hours</i>	NUMBER SENTENCES CAPS 2.1 p. 217 CAPS 2.3 p. 286 (see also 1.1 p. 225 and 2.2 p. 247) <i>Term 4: 3 hours</i>	NUMBER SENTENCES CAPS 2.4 p. 64, 69	ALGEBRAIC EQUATIONS CAPS 2.4 p. 91, 94, 113	ALGEBRAIC EQUATIONS CAPS 2.4 p. 132, 144
Write number sentences to describe problem situations • Solve and complete number sentences by -- inspection -- trial and improvement • Check solution by substitution	Write number sentences to describe problem situations • Solve and complete number sentences by -- inspection -- trial and improvement • Check solution by substitution	Write number sentences to describe problem situations • Solve and complete number sentences by -- inspection -- trial and improvement • Check solution by substitution	Write number sentences to describe problem situations • Analyse & interpret number sentences • Solve and complete number sentences by: -- inspection -- trial & improvement • Determine numerical value of an expression by substitution. • Identify variables and constants in formulae or equations.	<i>Term 3: 3 hours</i> <i>Term 4: 7 hours</i> <i>Term 1: 3 hours</i> <i>Term 2: 3 hours</i> <i>Term 4: 3 hours</i>	<i>Term 1: 4 hours</i> <i>Term 3: 9 hours</i> • Revise the work done in Grade 8 • Extend solving equations to include: -- using factorisation -- equations of the form: a product of factors = 0
Describe patterns by, amongst others, a number sentence	Describe patterns by, amongst others, a number sentence	Describe patterns by, amongst others, a number sentence			

Complete the following notes through group discussion

1. In the topic *Number Sentences* there seems to be no progression across grades in the Intermediate Phase, but there is progression towards Grade 7.
2. Writing and solving number sentences prepares learners for _____ in the Senior Phase.
3. Writing and solving number sentences also provides the opportunity to consolidate learners' knowledge of _____.
4. Discuss whether the transition from number sentences to algebraic equations in Grade 7 serves the purpose completely.
5. In other topics in both phases there is a focus on different, yet equivalent forms of describing problems, patterns or relationships, which includes number sentences in the Intermediate Phase and algebraic expressions and equations in the Senior Phase.
6. Observation about the time allocation: _____
7. Observation about the spread of the topic across terms _____
8. Further observation: _____
9. Total time allocation for number sentences: _____
10. Total time allocation for algebraic expressions and equations: _____

TRAINING EXERCISE: NUMBER SENTENCES AND ALGEBRAIC EQUATIONS

(Pair work)

(a) Describe the following situation mathematically in a number sentence:

- i. Grade 4: Thabo is 9 years old and his dad is 33 years old. How much older is his dad than he is?

OR

- ii. Grade 5: Thabo is 9 years old and his dad is 24 years older than he is. How old is his dad?

OR

- iii. Grade 6: Thabo is 9 years old now. In three years' time his dad will be 3 times his age. How old is his dad now?

OR

- iv. Grade 7: In three years' time Thabo's dad will be 3 times his age. His mom is now 3 times his age and she is 27. How much older is Thabo's dad than he is?

OR

(b) Give a real-life situation of which the following algebraic equations are the mathematical descriptions:

- i. Grade 7: $20 - x = 15$ (describe a situation in a money context)

- ii. Grade 8: $2x - 50 = 450$ (describe a situation in a mass context)

- iii. Grade 9: $\frac{x}{2} + 54 = 5x$ (describe a situation in a length/distance context)

NUMBER SENTENCES PRE- AND POST-TESTS

PRE-TEST

<p>Mark the following Grade 5 number sentences for the situations by giving a ✓ for a correct number sentence or a X for an incorrect number sentence:</p>		
1	<p>There is a number that is two less than 15. What is that number? $\square - 2 = 15$</p>	
2	<p>Jabu has two times more marbles than Thabo. Jabu has 36 marbles. How many marbles does Thabo have? $2 \times \square = 36$</p>	
3	<p>There are 13 more learners in Grade 6 than in Grade 5. In Grade 6 there are 44 learners. How many learners are in Grade 5? $44 + 13 = \square$</p>	
4	<p>At the sale Pam paid half price for shoes that were marked R320 before the sale. How much did Pam pay for the shoes? $\square \times 2 = 320$</p>	
5	<p>Mom paid R33 for three-kilogram bananas. What is the price of one-kilogram bananas? $33 \div 3 = \square$</p>	

POST-TEST

<p>Mark the following Grade 5 number sentences for the situations by giving a ✓ for a correct number sentence or a X for an incorrect number sentence:</p>		
1	<p>There is a number that is five more than 84. What is that number? $\square + 5 = 84$</p>	
2	<p>Princess has three times more money than Pamela. Princess has R24. How much money does Pamela have? $3 \times 24 = \square$</p>	
3	<p>There are 12 fewer learners in Grade 5 than in Grade 6. In Grade 5 there are 43 learners. How many learners are in Grade 6? $43 - 12 = \square$</p>	
4	<p>At the sale Pam paid half price for a pair of shoes. She paid R125 for the pair of shoes. What was the price of the shoes before the sale? $125 \times 2 = \square$</p>	
5	<p>Uncle Jim paid R60 for 4 litres of petrol. What is the price of one litre petrol? $4 \times \square = 60$</p>	

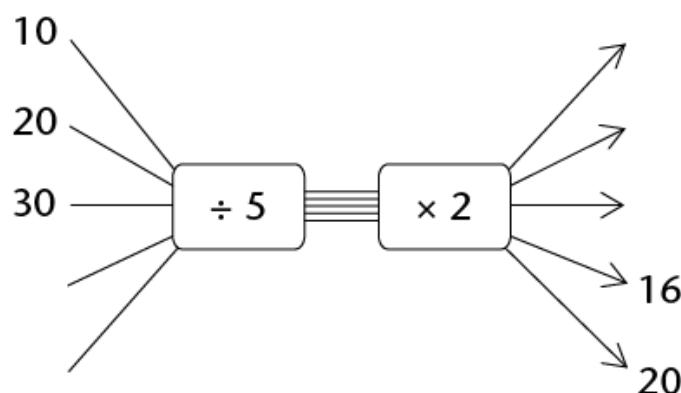
ALGEBRAIC EQUATIONS (GRADE 7-9)

Sequential Table

INTERMEDIATE PHASE/GRADE 7 GRADE 8		GRADE 9/ FET PHASE
LOOKING BACK	CURRENT	LOOKING FORWARD
<ul style="list-style-type: none"> Write number sentences to describe problem situations Analyse and interpret number sentences Solve and complete number sentences by inspection and trial and error Determine the numerical value of an expression by substitution Identify variables and constants in given formulae or equations 	<ul style="list-style-type: none"> Set up equations to describe problem situations Analyse and interpret equations that describe a situation Solve equations by inspection Determine the numerical value of an expression by substitution Identify variables and constants in given formulae or equations Use substitution in equations to generate ordered pairs Extend solving equations to include using additive inverses, multiplicative inverses and the laws of exponents 	<ul style="list-style-type: none"> Set up equations to describe problem situations Analyse and interpret equations Solve equations by inspection Solve equations using additive inverses, multiplicative inverses and the laws of exponents Determine the numerical value of an expression by substitution Use substitution in equations to generate ordered pairs Solve equations using factorisation Solve equations in the form: a product of factors = 0

Writing, analysing and interpreting number sentences to describe problem situations

4.



Determining numerical values of an expression by substitution

23.

length	breadth	Area $l \times b$	Perimeter $2l + 2b$
5cm	2cm		
8m	6m		
4cm	7cm		
2m	10m		
9km	3km		

Generate tables of ordered pairs using substitution

15.

For example: Given the equation $y = 3x + 2$ complete the following table:

x	-2	-1	0	1	2
y					

16.

For example: Given the equation $y = -2x + 1$ complete the following table:

x	-3	0	1		
y				-3	5

Solving equations using factorisation (Quadratic Equations)

6.

$x^2 = 9$	$a^2 - 3a = 0$	$x^2 + 7x + 10 = 0$	$x^2 + x - 12 = 0$	$y^2 - 15 = -2y$
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17.

This excerpt was taken from Quora digest (an interesting site where anyone can ask any question and someone who considers themselves knowledgeable enough attempts to answer the question):

The question was: **Why do some people find mathematics difficult?**

I once bought a guitar. Just a cheap one, so I could learn some Cat Stevens. Watched YouTube tutorials, diligently practiced my G and E chords. This was going to be fun!

Six months later, I still couldn't play any songs. *Wild World* sounded more like *Awkward Slow World*. My guitar gathered dust. I was frustrated.

Why is guitar hard for most people?

The answer, of course, is that playing guitar is a skill that requires practice. Practice that compounds on itself, but usually too slowly to appreciate the progress.

(Remind you of math yet?)

I had underestimated the sheer number of hours it takes to get good at this new skill. Every time I heard the melodies of a master guitarist - so beautiful, so effortless! - I failed to see the thousands of hours of struggle and pain that had come before.

Practice became tedious and discouraging. I was working hard, but still nowhere near as competent as I thought I was "supposed" to be by now.

I lost steam. Practicing less often, shorter sessions. Why would I want daily reminders that I suck?

Yet without regular practice, my fingers never did develop the muscle memory to play a song smoothly.

And as I sold my guitar to a friend, I sighed and said... "*I guess I'm just not a guitar person.*"

Contrary to old beliefs, mathematical ability is not something that some people are born with and others not.

No amount of talent has ever replaced the need for practice. But you can only be great at something if you actually enjoy the struggle.

2D SHAPES (GR 4-7), PYTHAGORAS THEOREM (GR 8-9)

PROGRESSION OF THE TEACHER GUIDELINES AND CLARIFICATION NOTES FOR THE TOPIC(S) ACROSS GRADES AND PHASES

All topics below are essential for learners to understand the theorem of Pythagoras. Below is an extract from the CAPS document.

INTERMEDIATE PHASE			SENIOR PHASE		
Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9
TRIANGLES CAPS 3.1 Recognize, visualise and name triangles	TRIANGLES CAPS 3.1. Describe, sort and compare triangles in terms of their angles, including right angles	TRIANGLES CAPS 3.1. Describe, sort and compare triangles in terms of their angles, including right angles	TRIANGLES CAPS 3.1 Classify triangles according to their sides and angles, including right-angled triangles,	THE THEOREM OF PYTHAGORAS CAPS 4.3, p. 106 <i>Term 3: 5 hours</i>	THE THEOREM OF PYTHAGORAS CAPS 4.3, p. 138 <i>Term 2: 5 hours</i>
PERIMETER CAPS 4.6 Measure perimeter of a triangle using rulers or measuring tapes	PERIMETER CAPS 4.6 Measure perimeter of a triangle using rulers or measuring tapes	PERIMETER CAPS 4.6 Measure perimeter of a triangle using rulers or measuring tapes	PERIMETER CAPS 4.1 Use the appropriate formula to calculate the perimeter of a triangle	<ul style="list-style-type: none"> Investigate the relationship between the lengths of the sides of a right-angled triangle to develop the Theorem of Pythagoras Determine whether a triangle is a right-angled triangle or not if the length of three sides of the triangle are known Use the Theorem of Pythagoras to calculate a missing length in a right-angled triangle, leaving irrational answers in surd form 	Solve problems using the Theorem of Pythagoras Use the Theorem of Pythagoras to solve problems involving unknown lengths in geometric figures that contain right-angled triangles
AREA OF A SQUARE CAPS 4.6 Find area of regular shapes by counting squares on grids to understand square units	AREA OF A SQUARE CAPS 4.6 Find area of regular shapes by counting squares on grids to understand square units	AREA OF A SQUARE CAPS 4.6 <ul style="list-style-type: none"> Find area by counting squares on grids Develop rules to calculate area of square 	AREA OF A SQUARE CAPS 4.1 Use the appropriate formula to calculate the area of a square		
RATIO CAPS 1.1 Solve problems with whole numbers, including comparing two quantities of the same kind (ratio)	RATIO CAPS 1.1 Solve problems with whole numbers, including comparing two quantities of the same kind (ratio)	RATIO CAPS 1.1 Solve problems with whole numbers, including comparing two quantities of the same kind (ratio)	RATIO CAPS 1.1 Solve problems with whole numbers, including comparing two quantities of the same kind (ratio)		

TRAINING EXERCISE: THE PYTHAGORAS THEOREM

PREPARING THE SKILLS AND KNOWLEDGE USED (Pair work)

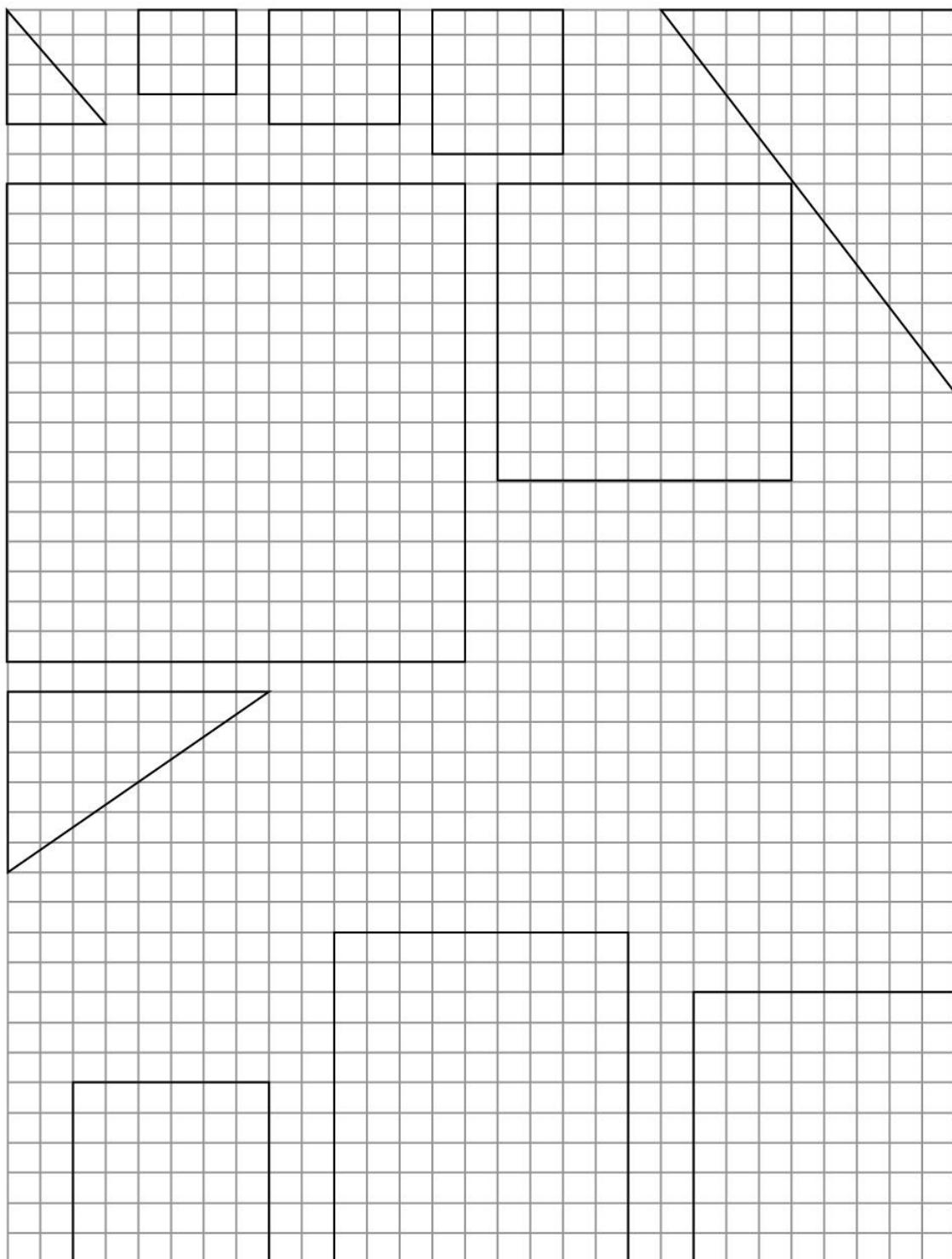
- Cut out the shapes on the quad paper. The long single rectangle is the “ruler”.
- Write down the dimensions and area of all squares, in ascending order, in (u) and ($sq\ u$)

	Square a	Square b	Square c	Square d	Square e	Square f	Square g	Square h	Square i
Length									
Width									
Area									

- Write down the dimensions of all the triangles in ascending order, in (u)

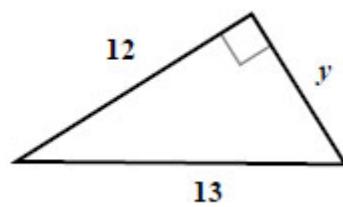
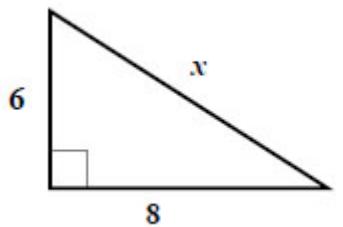
	Short right side	Long right side	Side opposite right angle
Triangle 1			
Triangle 2			
Triangle 3			

- Make three groups, each with a triangle and its colour squares, and place them on a sheet of paper. Measure the side opposite the right angle of each triangle with the “ruler” and write it down in a whole number on that side. Fit a square onto each side of every triangle.
- Now make four groups as follows:
 - all triangles together
 - all the smallest squares of each colour together
 - all the medium squares of each colour together
 - all the largest squares of each colour together
- Suggest a discussion with learners in the Intermediate Phase which will assist them to explore and discover the following:
 - The ratio of the dimensions of the three triangles
 - The ratio of the areas of the nine squares, grouped in three groups
 - The links that between the sides of the triangles and the dimensions of the squares
 - Discuss a natural way of helping learners to discover the Pythagoras theorem informally



PYTHAGORAS THEOREM (Grade 8-9)

5.



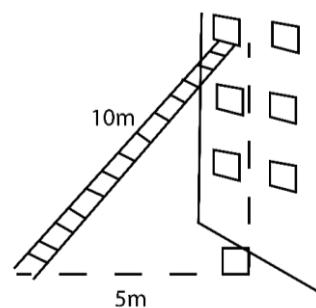
14.

a	<p>Right triangle RST with a horizontal leg RS of length 15 and a vertical leg ST of length 8. A small square at the vertex S indicates a right angle.</p>	b	<p>Right triangle MNP with a vertical leg MN of length 9 and a hypotenuse NP of length 40. A small square at the vertex N indicates a right angle.</p>
c	<p>Right triangle PQR with a horizontal leg PQ of length 24 and a hypotenuse PR of length 26. A small square at the vertex Q indicates a right angle.</p>	d	<p>Right triangle JKL with a horizontal leg JK of length 24 and a hypotenuse JL of length 25. A small square at the vertex K indicates a right angle.</p>

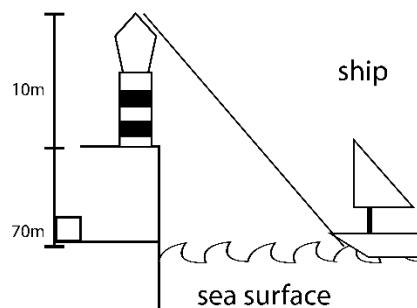
15.

a	<p>Find the height of the tree using the length of its shadow to help you.</p> <p>The diagram shows a tree standing vertically. A dashed line extends from the top of the tree to the end of its shadow on the ground. The length of the shadow is labeled 7.5m. The distance from the base of the tree to the end of the shadow is labeled 6.2m.</p>
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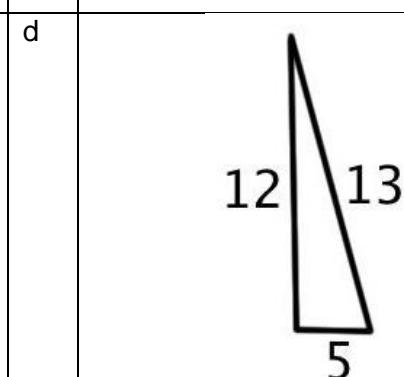
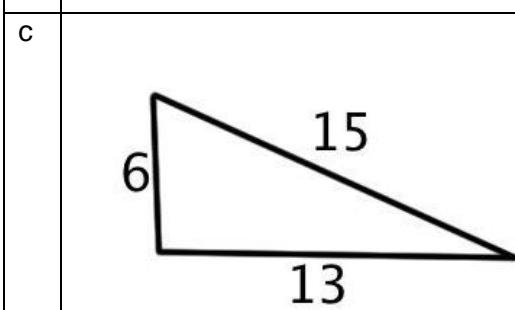
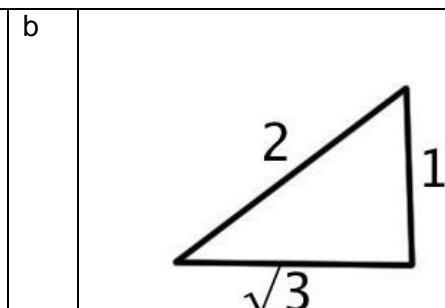
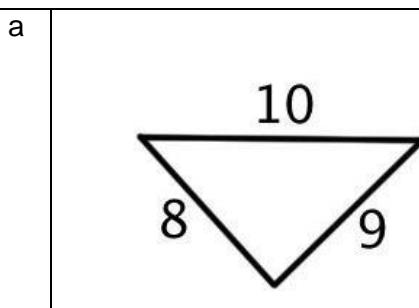
b Find the height of the window



c A lighthouse is 10m high and is on top of a cliff that is 70m high. The beam of light from the lighthouse shines a beam of light out to a ship which is 192m from the foot of the cliff. How long is the beam of light?

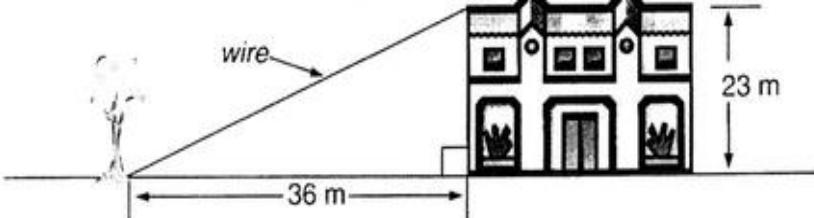
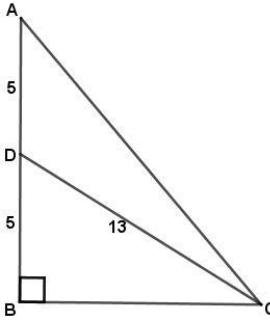
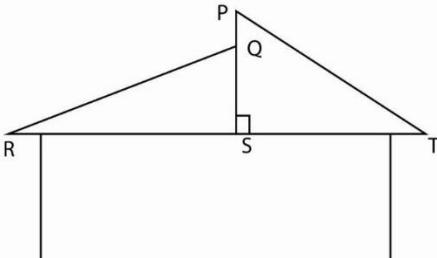
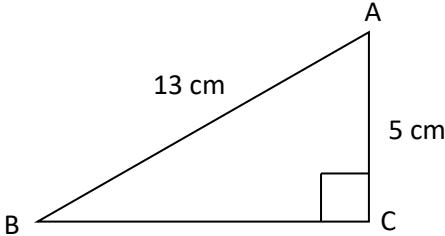


20.



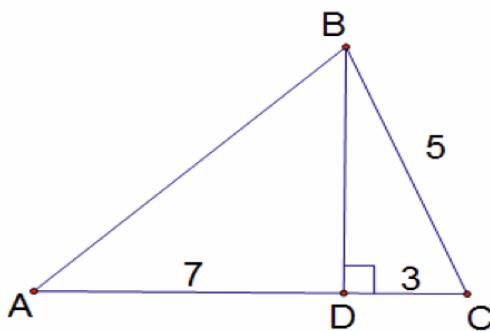
Key Concepts: Grade 9

3.

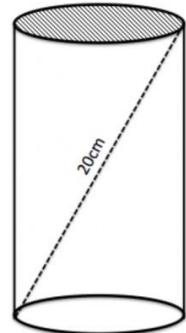
a	<p>How long is the wire that runs from the base of the tree to the roof of the house in the diagram:</p> 
b	<p>Find AC</p> 
c	<p>The triangles form the roof construction of a house.</p> <p>If $RS = ST = 5m$, $QR = 6,5m$ and $PT = 7m$, find the length of PQ.</p> 
d	<p>A grade 9 learner did the following work when asked to find the length of BC:</p> $\begin{aligned}BC^2 &= AB^2 + AC^2 \\&= (13)^2 + (5)^2 \\&= 169 + 10 \\&= 179\end{aligned}$ <p>$\therefore BC$ is equal to 179 cm^2.</p> <p>Discuss three mistakes that were made. Do the full correction at the end.</p> 

4.

- a Find AB, correct to 2 decimal places.



- b A cylinder is three times as high as it is wide. Find the radius and height of the cylinder, correct to two decimal places.



6.

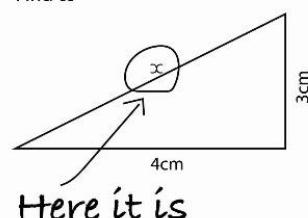
A box has a base 30cm by 20cm and a height of 25cm.

What is the length of the longest stick that can fit in the box?

(from a left-hand corner to a right-hand corner)

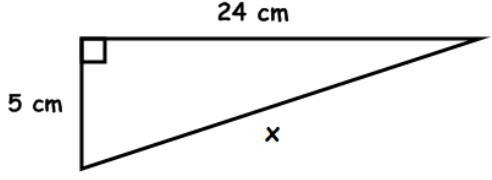
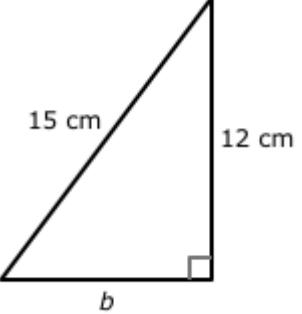


Find x

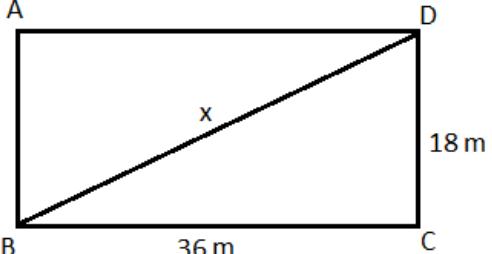
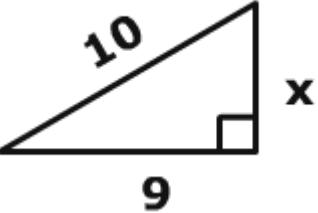


PYTHAGORAS THEOREM PRE- AND POST-TESTS

PRE-TEST

1	The theorem of Pythagoras is used in right-angled triangles to find	
2	Find the length of the missing side: 	
3	Find the length of the missing side: 	
4	A ladder is 13m long and reaches a window 12m above the ground. How far away from the wall is the foot of the ladder? (hint: draw a triangle)	

POST-TEST

1	The theorem of Pythagoras only works in	
2	Find the length of the diagonal of the rectangle: 	
3	Find the length of the missing side: 	
4	An aeroplane is 12km above the ground. The distance of its descent towards the airport is 105km. Calculate the aeroplane's ground distance to the airport. Round off your answer to the nearest whole number. (Hint: draw a triangle)	

PROBABILITY (GR 4-9)

PROGRESSION OF THE TEACHER GUIDELINES AND CLARIFICATION NOTES FOR THE TOPIC ACROSS GRADES AND PHASES

INTERMEDIATE PHASE			SENIOR PHASE		
Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9
PROBABILITY	PROBABILITY	PROBABILITY	PROBABILITY	PROBABILITY	PROBABILITY
CAPS 5.1 p. 119 <i>Term 4: 2 hours</i> • Perform simple repeated events and list possible outcomes for experiments such as: -- tossing a coin -- rolling a die	CAPS 5.2 p. 208 <i>Term 4: 2 hours</i> • Perform simple repeated events and list possible outcomes for experiments such as: -- tossing a coin -- rolling a die -- spinning a spinner • Count and compare the frequency of actual outcomes for a series of trials up to 20 trials	CAPS 5.1 p. 289 <i>Term 4: 2 hours</i> • Perform simple repeated events and list possible outcomes for experiments such as: -- tossing a coin -- rolling a die -- spinning a spinner • Count and compare the frequency of actual outcomes for a series of trials up to 50 trials	CAPS 5.4 p. 73 <i>Term 4: 4.5 hours</i> • Perform simple experiments where the possible outcomes are equally likely and: -- list the possible outcomes based on the conditions of the activity -- determine the probability of each possible outcome using the definition of probability	CAPS 5.4 p. 117 <i>Term 4: 4.5 hours</i> Consider a simple situation (with equally likely outcomes) that can be described using probability and: -- list all the possible outcomes -- determine the probability of each possible outcome using the definition of probability -- predict with reasons the relative frequency of the possible outcomes for a series of trials based on probability -- compare relative frequency with probability and explain possible differences	CAPS 5.4 p. 152 <i>Term 4: 4.5 hours</i> Consider situations with equally probable outcomes, and: -- determine probabilities for compound events using two-way tables and tree diagrams -- determine the probabilities for outcomes of events and predict their relative frequency in simple experiments -- compare relative frequency with probability and explain possible differences

PRACTICAL ACTIVITY: SPINNER

- a. Make a spinner from the template provided here. Colour the sectors as indicated.
- b. Push a pin through the centre.
- c. Spin it 24 times.
- d. Record the outcomes of all **trials** in a table, for the colours and the numbers that the spinner lands on.

OUTCOMES OF SPINNING A SPINNER WITH EIGHT NUMBERS AND FOUR COLOURS TWENTY TIMES

Trial	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Number																								
Colour																								

- e. Use the frequency table to record the number of times the spinner landed on each number.

FREQUENCY TABLE OF THE OUTCOMES OF SPINNING A SPINNER WITH EIGHT NUMBERS

Possible outcomes	Tallies	Frequency
1		
2		
3		
4		
5		
6		
7		
8		
TOTAL		

- f. Use the frequency table to sum up the number of times that the spinner landed on each colour.

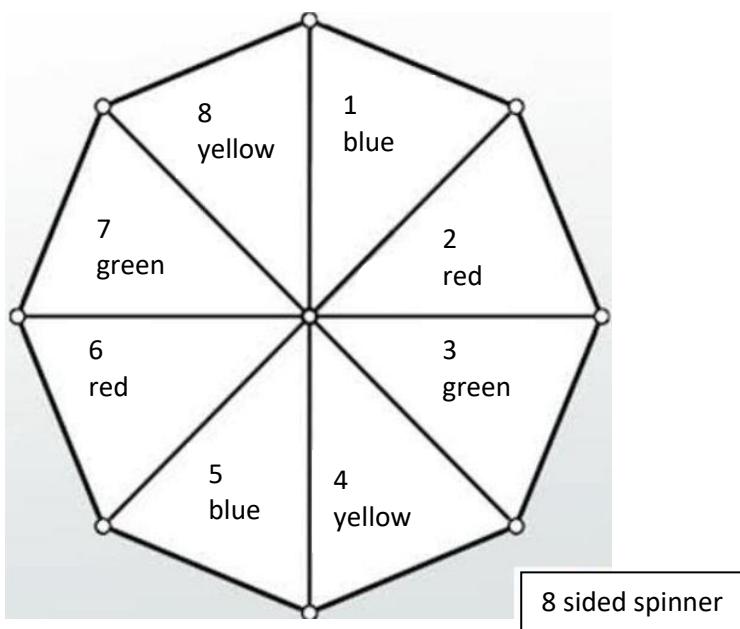
FREQUENCY TABLE OF THE OUTCOMES OF SPINNING A SPINNER WITH EIGHT NUMBERS

Possible outcomes	Tallies	Frequency
Blue		
Red		
Green		
Yellow		
TOTAL		

g. Answer the questions below:

- i. What is the probability that the spinner will land on black?
- ii. What is the probability that the spinner will land on an odd number?
 - Out of 24, what is the probability that the spinner will land on an odd number?
 - Out of 24, how many times did the spinner indeed land on an odd number?
- iii. What is the probability that the spinner will land on yellow?
 - Out of 24, what is the probability that the spinner will land on yellow?
 - Out of 24, how many times did the spinner indeed land on yellow?
- iv. What is the probability that the spinner will land on a number?
 - Out of 24, what is the probability that the spinner will land on the number 7?
 - Out of 24, how many times did the spinner indeed land on the number 7?
- v.

vi.



GR 7 -9 SEQUENTIAL TABLE

INTERMEDIATE PHASE/GRADE 7 GRADE 8		GRADE 9/ FET PHASE
LOOKING BACK	CURRENT	LOOKING FORWARD
<p>Perform simple experiments where the possible outcomes are equally likely and:</p> <ul style="list-style-type: none"> • List the possible outcomes based on the conditions of the activity • Determine the probability of each possible outcome using the definition of probability 	<p>Consider a simple situation (with equally likely outcomes) that can be described using probability and:</p> <ul style="list-style-type: none"> • List all the possible outcomes • Determine the probability of each possible outcome using the definition of probability • Predict with reasons the relative frequency of the possible outcomes for a series of trials based on probability • Compare relative frequency with probability and explain possible differences 	<p>Consider situations with equally probable outcomes and:</p> <ul style="list-style-type: none"> • Determine probabilities for compound events using two-way tables and tree diagrams • Determine the probabilities for outcomes of events and predict their relative frequency in simple experiments • Compare relative frequency with probability and explain possible differences

ACTIVITY: CARDS

QUESTIONS TO FAMILIARISE TEACHERS/LEARNERS WITH A PACK/DECK OF CARDS

How many cards are there in a pack/deck of cards?	
How many different types of cards (ie suits) are there?	
Name the 'suits'	
How many black suits are there?	
How many red suits are there?	
How many cards are there in each suit?	
How many face cards are there in each suit? (An Ace is not considered a face card)	
What is the name of the card given with an 'A' on it?	
List the cards in any one suit (No need to write in full – use J for Jack etc)	
Name the face cards	
How many non-numbered (lettered) cards are in each suit?	
Which card is non-numbered and also not a face card?	
How many black cards are there in a fair deck?	
How many red cards are there in a fair deck?	
In a full deck, how many:	
even numbered cards are there?	
odd numbered cards are there?	
lettered cards are there?	
of each kind of card are there? (how many 1's, 2's etc)	

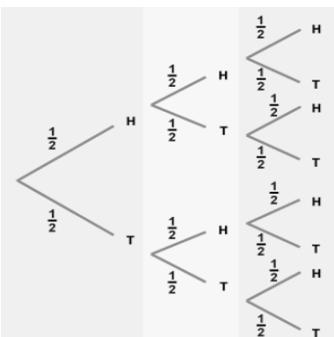
PROBABILITY QUESTIONS FOR A FAIR DECK OF CARDS

What is the probability that the card:

is red		is a black king	
is from the heart suit		is even numbered	
is a queen		has a number on it	
is the queen of spades		is a face card	
is a picture card		is a king or a queen	
is a red jack		is a spade or diamond	

PROBABILITY PRE- AND POST TESTS (GR 4 – 9)

PRE-TEST

1	What is the number value (not the percentage) that we attach to something that is certain to happen?																	
2	A die is thrown, what is the probability it will land on the '3'?																	
3	A die is thrown, what is the probability it will land on an even number?																	
4	There are 4 blue balls and 7 green balls in a bag. What is the probability of getting: a) a blue ball? b) a red ball?	a) _____ b) _____																
5	One card is drawn from a pack of playing cards. What is the probability of drawing a: a) queen b) red card c) picture card	a) _____ b) _____ c) _____																
6	Consider the following table: Gender compared to handedness If a person is chosen at random, what is the probability that the person is: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2" style="text-align: center;">Handed</th> </tr> <tr> <th style="text-align: center;">Left</th> <th style="text-align: center;">Right</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Female</td> <td style="text-align: center;">7</td> <td style="text-align: center;">46</td> <td style="text-align: center;">53</td> </tr> <tr> <td style="text-align: center;">Male</td> <td style="text-align: center;">5</td> <td style="text-align: center;">63</td> <td style="text-align: center;">68</td> </tr> <tr> <td></td> <td style="text-align: center;">12</td> <td style="text-align: center;">109</td> <td style="text-align: center;">121</td> </tr> </tbody> </table>	Handed		Left	Right	Female	7	46	53	Male	5	63	68		12	109	121	a) _____ b) _____ c) _____
Handed																		
Left	Right																	
Female	7	46	53															
Male	5	63	68															
	12	109	121															
7	Consider the following tree diagram that represents tossing a coin 3 times. 	a) What is the probability of getting 3 Heads one after the other? b) What is the probability of getting at least one Tails?																

Post- Test

1	What is the range in numbers (not percentage) of the probability scale? (from where to where does the probability scale go?)																	
2	A die is thrown, what is the probability it will land on the '1'?																	
3	A die is thrown, what is the probability it will land on a prime number?																	
4	There are 2 red balls and 5 yellow balls in a bag. What is the probability of getting: a) a yellow ball? b) a black ball?	a) _____ b) _____																
5	One card is drawn from a pack of playing cards. What is the probability of drawing a: a) 4 b) black card c) king or a Queen	a) _____ b) _____ c) _____																
6	Consider the following table: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Eat Breakfast</th> <th>Skip Breakfast</th> <th>Totals</th> </tr> </thead> <tbody> <tr> <td>Students: ages 10-13</td> <td>40</td> <td>14</td> <td>54</td> </tr> <tr> <td>Students: ages 14-17</td> <td>12</td> <td>24</td> <td>36</td> </tr> <tr> <td>Totals</td> <td>52</td> <td>38</td> <td>90</td> </tr> </tbody> </table> If a person is chosen at random, what is the probability that the person: a) eats breakfast b) is 15 years old c) skips breakfast and is 10 years old		Eat Breakfast	Skip Breakfast	Totals	Students: ages 10-13	40	14	54	Students: ages 14-17	12	24	36	Totals	52	38	90	a) _____ b) _____ c) _____
	Eat Breakfast	Skip Breakfast	Totals															
Students: ages 10-13	40	14	54															
Students: ages 14-17	12	24	36															
Totals	52	38	90															
7	Consider the tree diagram alongside. It represents picking a ball out of a bag. After the first draw, the ball is replaced. There are 4 Black balls, 2 white balls and 5 red balls. a) Write the probability on each branch using a fraction. What is the probability that:	a)																

	b) 2 red balls are drawn one after the other c) a white and a black ball in any order	<p style="text-align: center;">First Second</p> <pre>graph LR; Root(()) -- B --> B1B(()); Root -- W --> B1W(()); Root -- R --> B1R(()); B1B -- B --> B2B1(()); B1B -- W --> B2W1(()); B1B -- R --> B2R1(()); B1W -- B --> B2B2(()); B1W -- W --> B2W2(()); B1W -- R --> B2R2(()); B1R -- B --> B2B3(()); B1R -- W --> B2W3(()); B1R -- R --> B2R3(());</pre>
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b) _____

c) _____