N4 NUMERACY 1.4

This resource is to support pupils in passing the appropriate National 4 Assessment Standard. The questions and marking schemes used are from SQA past papers and as such test the topics in their entirety from grade A to C and *may* include other areas from the course. In addition the questions from **Paper 1** (P1) should be completed **without** the use of a calculator and questions from **Paper 2** (P2) permit the use of a calculator.

Each Assessment Standard is used to ensure pupils have the minimum competency on the specified sub-skills for the National 4 course. As such each Assessment Standard will test grade C work on that specific topic.

This resource is divided into two sections:

- Section A has an example on each sub skill for the relevant Assessment Standard and the marking scheme for these questions
- Section B has extra practice questions on this Assessment Standard and the marking scheme for these questions

Unit Assessment Standard	Sub skills	Section A – Question Number
Numeracy 1.4 Interpreting measurements and results of calculations to make decisions	Interpreted measurements to make a decision on at least one occasion correctly. Interpreted the results of calculations to make a decision on at least one occasion correctly.	Q1 Q2

FORMULAE LIST

Circumference of a circle: $C = \pi d$

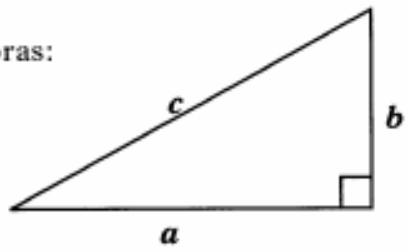
Area of a circle: $A = \pi r^2$

Curved surface area of a cylinder: $A = 2\pi rh$

Volume of a cylinder: $V = \pi r^2 h$

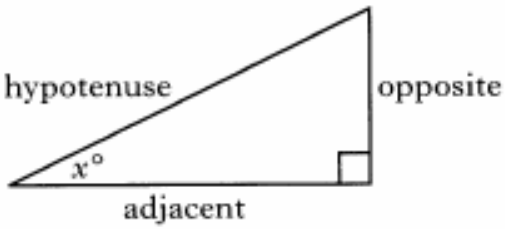
Volume of a triangular prism: $V = Ah$

Theorem of Pythagoras:



$$a^2 + b^2 = c^2$$

Trigonometric ratios in a right angled triangle:

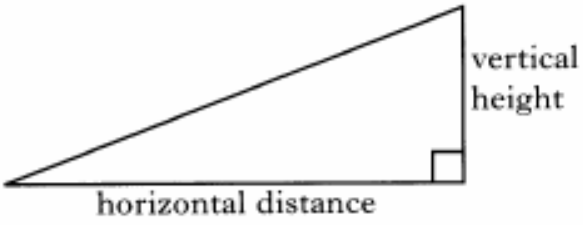


$$\tan x^\circ = \frac{\text{opposite}}{\text{adjacent}}$$

$$\sin x^\circ = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos x^\circ = \frac{\text{adjacent}}{\text{hypotenuse}}$$

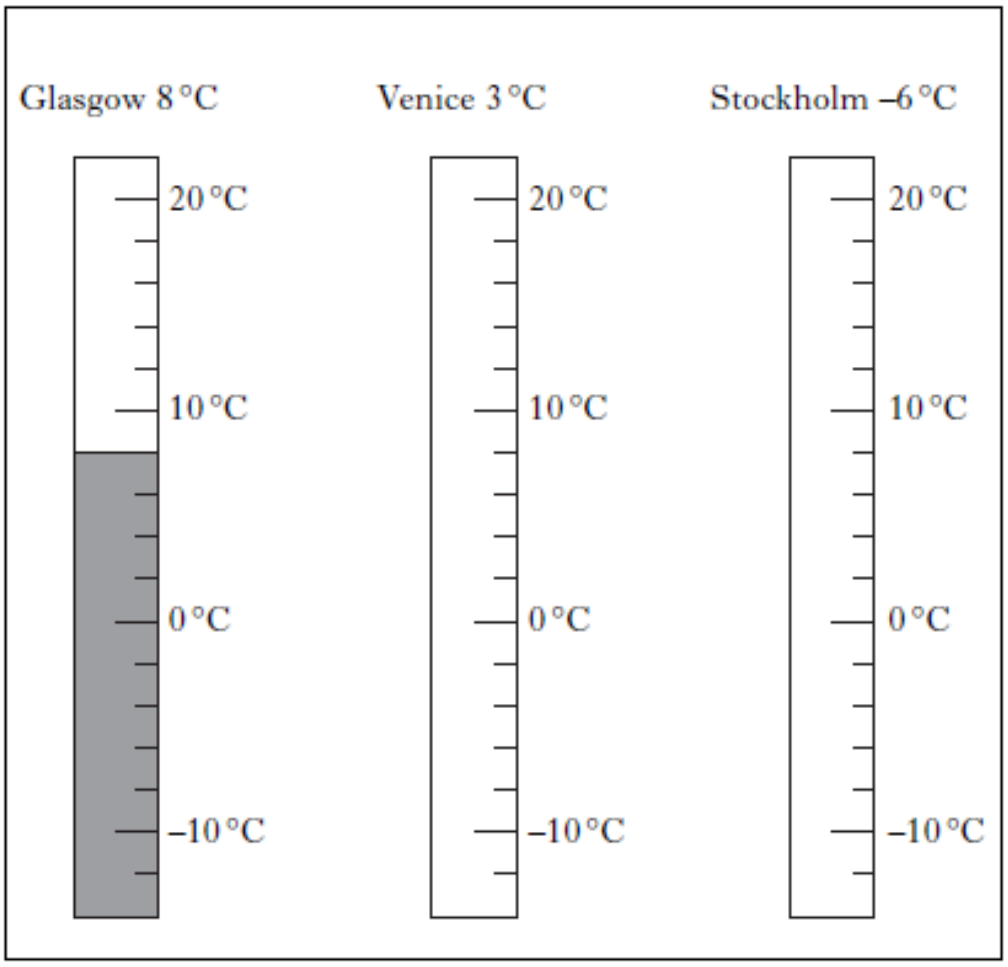
Gradient:



$$\text{Gradient} = \frac{\text{vertical height}}{\text{horizontal distance}}$$

Section A

Q		Marks
Q1 P1	7. Each day a hotel displays graphs showing the temperatures in some cities. The graph for Glasgow has been completed. (*a*) Complete the graphs for Venice and Stockholm.	2
	(*b*) How many degrees warmer is it in Venice than Stockholm?	2



Q2 P1

9. A recipe for Shortbread uses the following ingredients.

300 grams flour
100 grams sugar
200 grams butter

Alana has only 240 grams of flour.

Alana has only 80 grams of sugar.

Alana has only 150 grams of butter.

To use as much of the ingredients as possible Alana will have to adjust the amounts used for each ingredient.

What will be the new amounts used for each ingredient that still follows the recipe?

Section A

MARKING SCHEME

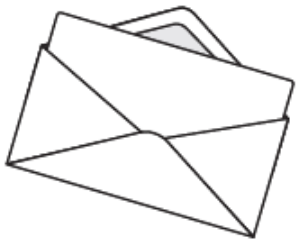
Section A - Marking Scheme

Q		Marks
Q1	7 (a) **Ans: graphs correctly completed** •1 show 3°C in Venice graph — •1 Evidence •2 show –6°C in Stockholm graph — •2 Evidence **2K**	**2**
	(b) **Ans: 9°C** •1 use graphs to find difference between 3 and –6 or equivalent — •1 Evidence (see NOTE 1) •2 correctly find difference — •2 9 **2R**	**2**
	NOTES: 1. Examples of evidence for the first mark (a) 3 – (–6) or 3 + 6 or –3 – 6 or –6 – 3 (b) A number line clearly marked from 3 to –6 (c) Markings on graphs indicating an interval from 3 to –6 2. For evidence of 3 → (–6) followed by no answer or a wrong answer, award 0/2 3. Where the graphs in part (a) have been completed incorrectly, full marks are available in part (b) for either following through **or** 9 4. For an answer of –9, with or without working, award 1/2	

Q2	• 1 mark Knowing to find the different ratios (at least one) 240/300 = 4/5: • 1 mark for the other amounts: 80/100 = 4/5 and 150/200 = ¾ • 1 mark for knowing to select the least fraction (3/4) • 1 mark for finding ¾ of 300 = 225 • 1 mark for the other 2 amounts: ¾ of 100 = 75 and ¾ of 200 = 150.	**5**

Section B

Section B – Paper 1 – Questions

Q		Marks
1	7. The cost of sending a letter depends on the size of the letter and the weight of the letter. 	

Format	Weight	Cost	
		1st Class Mail	2nd Class Mail
Letter	0–100 g	34p	24p
Large Letter	0–100 g	48p	40p
	101–250 g	70p	60p
	251–500 g	98p	83p
	501–750 g	142p	120p

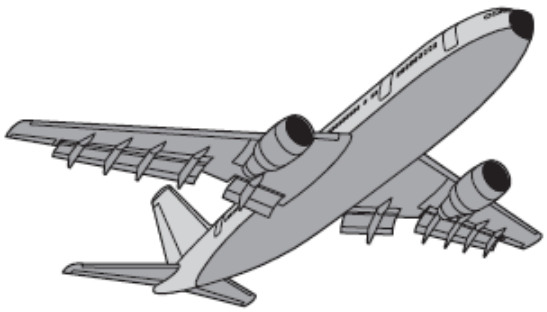
Claire sends a letter weighing 50 g by 2nd class mail.

She also sends a large letter weighing 375 g by 1st class mail.

Claire has £1.32 in her purse as change. Can she use this change or will she have to split a £10 note. Explain your answer. **4**

2

8. Adam's plane is due to depart at 1630.



(*a*) Write 1630 as a **12-hour time**. **1**

ANSWER	

(*b*) The latest check-in time for Adam's flight is 1 hour 15 minutes before departure.

It takes 45 minutes to drive from Adam's house to the airport.

Adam leaves his house at 1410.

Will Adam be able to check in on time? **4**

Give a reason for your answer.

Section B – Paper 2 – No Questions

Section B

MARKING SCHEME

Section B – Paper 1 – Marking Scheme

Q 1

7	**Ans:**	**(£)1.22**		
	$\bullet^1$	Finds cost of letter	$\bullet^1$	24p
	$\bullet^2$	Finds cost of large letter	$\bullet^2$	98p
	$\bullet^3$	Correct total	$\bullet^3$	(£)1·22
				3K

Note:

Final Answer	**with working**	**without working**
(£)1.22	3/3	2/3

Yes – Claire can use the change as the amount needed is £1.22 while she has £1.32. Therefore she has 10p spare.

Marks: 4

Q 2

8 (a)	**Ans:**	**4.30 pm**		
	$\bullet^1$	give correct answer as a 12 hour time	$\bullet^1$	4.30 pm

Marks: 1

NOTES:

1. Do not accept 4.30
2. Accept 04:30 pm

(b)	**Ans:**	**Yes, with appropriate comparison**		
	$\bullet^1\bullet^2$	correct strategy	$\bullet^1\bullet^2$	See NOTE 1
	$\bullet^3$	all calculations correct	$\bullet^3$	1610 or equivalent
	$\bullet^4$	valid conclusion with comparison	$\bullet^4$	Yes, since 1610 is before 1630

Marks: 4

NOTES:

1. A correct strategy could be
   1410 + 1h15m + 45m
   1630 – 45m **and** 1410 + 1h15m
   1630 – 1h15m **and** 1410 + 45m
   1630 – 1h15m – 45m
   1630 – 1410 – 1h15m
   1630 – 1410 – 45m
   (Award 1 for a partial strategy from any of the above)

2. For the third mark, two related calculations are required.

3. A valid conclusion could be
   Yes, since 1610 is before 1630
   Yes, since 1525 is before 1545
   Yes, since 1455 is before 1515
   Yes, since 1410 is before 1430
   Yes, since 1h5m is more than 45m
   Yes, since 1h35m is more than 1h15m
   Yes, since he has 20 minutes to spare

4. Some common answers (with or without working)

1525 (1410 + 1h15m)	award 1/4
1455 (1410 + 45m)	award 1/4
1545 (1630 – 45m)	award 1/4
1515 (1630 – 1h15m)	award 1/4
2h (1h15m + 45m)	award 1/4
2h20m (1630 – 1410)	award 1/4
1610	award 3/4
1525 **and** 1545	award 3/4
1455 **and** 1515	award 3/4
1430	award 3/4
1h5m	award 3/4
1h35m	award 3/4

5. Where a candidate uses the same time twice eg 45m + 45m instead of 45m + 1h15m, 3/4 are still available.