Number in Geometry

> We are practising number addition in geometrical contexts.
> We are practising addition where numbers add to 90, 180 and 360
> We are finding factors of 90, 180 and 360
> We are practising operations on 90,180, 360
> We are solving problems in geometrical contexts

Exercise 1 – Quatre-vingt dix

There are a lot of situations in geometry when angle numbers add up to 90, 180 and 360 and multiples of these numbers. This exercise practises adding to 90.

What to do

1) Do the problems in your head and record your answers.
2) Be prepared to say how you got your answer.

What number is added to these to make 90?

1)	30	(2)	50	(3)	70
4)	35	(5)	55	(6)	75
7)	25	(8)	45	(9)	65
10)	30	(11)	60	(12)	90
13)	10	(14)	20	(15)	40
16)	5	(17)	15	(18)	80
19)	22	(20)	32	(21)	52
22)	58	(23)	38	(24)	28
25)	88	(26)	77	(27)	66
28)	1	(29)	9	(30)	19

Some things to think about

- You have been finding the **complement** of an angle. Write in your own words what you think the **complement** of an angle means.
- The French language has a curious way of saying **ninety**. Write in your own words what you think the **quatre-vingt-dix** means.
- Explain what a **"quarter turn"** means. Does it matter which way you turn?
- What does the Army command **"Left turn"** and **"Right turn"** mean?

Exercise 2 – Un cent'otto

There are a lot of situations in geometry when angle numbers add up to 90, 180 and 360 and multiples of these numbers. This exercise practises adding to 180.

What to do
1) Do the problems in your head and record your answers.
2) Be prepared to say how you got your answer.

What number is added to these to make 180

1)	30	(2)	90	(3)	150
4)	20	(5)	80	(6)	140
7)	40	(8)	100	(9)	160
10)	50	(11)	110	(12)	170
13)	10	(14)	60	(15)	70
16)	5	(17)	15	(18)	175
19)	25	(20)	155	(21)	135
22)	45	(23)	55	(24)	65
25)	175	(26)	172	(27)	12
28)	33	(29)	133	(30)	111

Some things to think about
- You have been finding the **supplement** of an angle. Write in your own words what you think the **supplement** of an angle means.
- The Italian language has a curious way of saying **one hundred and eighty**. Write in your own words what you think **un cent'otto** means.
- Explain what a "half turn" means. Does it matter which way you turn?
- What does the Army command **"About turn"** mean?
- How many quarter turns make a half turn?
- In navigation or map reading, what does **"Back-bearing"** mean?

Exercise 3 – Adding to 360

There are a lot of situations in geometry when angle numbers add up to 90, 180 and 360 and multiples of these numbers. This exercise practises adding to 360.

What to do

1) Do the problems in your head and record your answers.
2) Be prepared to say how you got your answer.

What number is added to these to make 360

1)	180	(2)	160	(3)	190
4)	100	(5)	200	(6)	300
7)	140	(8)	240	(9)	340
10)	220	(11)	120	(12)	320
13)	270	(14)	90	(15)	60
16)	45	(17)	135	(18)	235
19)	225	(20)	325	(21)	125
22)	18	(23)	38	(24)	228
25)	345	(26)	245	(27)	145
28)	7	(29)	77	(30)	177

Some things to think about

- Explain what a **"full turn"** means. Does it matter which way you turn?
- Three hundred and sixty is a very flexible number. Write down all the number pairs you can think of that multiply to give 360 [eg 4 x 90 is 360]
- How many quarter turns make a full turn?
- How many half turns make a full turn?
- The Mayan people who lived about a thousand years ago decided that there should be 360 days in a year and the extra days were holidays. Do you like this idea? Why?

Exercise 4 – Adding to 90, 180, 270 and 360 Combo.

This exercise practises adding to 90, 180, 270 and 360.

What to do

1) Do the problems in your head and record your answers.
2) Be prepared to say how you got your answer.

What number is added to these to make 360

1)	270	(2)	90	(3)	180
4)	30	(5)	210	(6)	330
7)	45	(8)	225	(9)	315

What number is added to these to make 180

10)	90	(11)	45	(12)	135
13)	30	(14)	60	(15)	170
16)	15	(17)	45	(18)	115

What number is added to these to make 270

19)	90	(20)	180	(21)	135
22)	210	(23)	150	(24)	240
25)	225	(26)	235	(27)	215

What number is added to these to make 90

28)	60	(29)	30	(30)	45
31)	20	(32)	40	(33)	50
34)	25	(35)	75	(36)	65

Some things to think about

What angle do you turn through if you spin around twice through **two full turns**?
How about 3 turns, 4 turns, 5 turns and so on?
Use the table below to record your calculations for multiple turns.

Turns	Angle		Turns	Angle		Turns	Angle
1	360		5			9	
2			6			10	
3			7			20	
4			8			100	

Exercise 5 – The factors of 90,180 and 360

This exercise practises listing the factors of 90.

What to do

1) Do the problems in your head and record your answers.
2) Be prepared to say how you got your answer.

Starter

List the factors of 12.

Factors of 12 are { 1, 2,   6, 12}

Are you **absolutely** sure you have all of the factors of 12?

Explain how you know this.

Factors of 90

List the factors of 90.

Factors of 90 are { 1, 2, 3,   45, 90}

Working Space

Factors of 180

List the factors of 180.

Factors of 180 are { 1, 2, 3,   90, 180}

Working Space

Factors of 360

List the factors of 360.

Factors of 360 are { 1, 2, 3,   180, 360}

Working Space

Some things to think about

- Colour all the common factors of 90, 180 and 360 in a clever way.
- Explain why choosing 360 degrees in one full turn is a good choice. What other numbers would work as well?

Exercise 6 – Mystery Boxes #90

This exercise uses number properties and you **should not have to add** anything!
What to do
1) Do the problems in your head and record your answers.
2) Be prepared to say how you got your answer.

What number in the box makes these number equations TRUE

1) $\square + 30 = 50 + 40$ (2) $\square + 20 = 50 + 40$ (3) $\square + 10 = 50 + 40$

4) $10 + \square = 30 + 60$ (5) $20 + \square = 30 + 60$ (6) $30 + \square = 30 + 60$

7) $60 + 30 = \square + 40$ (8) $60 + 30 = \square + 50$ (9) $60 + 30 = \square + 70$

10) $80 + 10 = 50 + \square$ (11) $80 + 10 = 60 + \square$ (12) $80 + 10 = 10 + \square$

13) $\square + 45 = 55 + 35$ (14) $\square + 70 = 15 + 75$ (15) $\square + 35 = 50 + 35$

16) $5 + \square = 55 + 35$ (17) $10 + \square = 80 + 10$ (18) $11 + \square = 21 + 59$

19) $12 + 78 = \square + 48$ (20) $17 + 73 = \square + 43$ (21) $18 + 72 = \square + 42$

22) $84 + 6 = 54 + \square$ (23) $86 + 4 = 56 + \square$ (24) $89 + 1 = 59 + \square$

25) $\square + 72 = 12 + 78$ (26) $\square + 54 = 34 + 56$ (27) $\square + 43 = 53 + 37$

28) $12 + \square = \square + 12$ (29) $90 + \square = \square + 20$ (30) $45 + \square = \square + 45$

Some things to think about
- In mathematics, what word do we use the symbol # to stand for?
- What does the command **"Right turn"** mean?
- What does the command **"Left turn"** mean?
- There are two ways you can turn, to the left or in French 'a la gauche', and to the right or in French 'a la droit'. One way is a positive turn and the other is a negative turn. Which way do you think is a positive turn? Explain your reason.

Exercise 7 – Mystery Boxes #180

This exercise uses number properties and you **should not have to add** anything!

What to do
1) Do the problems in your head and record your answers.
2) Be prepared to say how you got your answer.

What number in the box makes these number equations TRUE

1) ☐ + 130 = 140 + 40   (2) ☐ + 120 = 50 + 130   (3) ☐ + 100 = 150 + 30

4) 110 + ☐ = 130 + 50   (5) 120 + ☐ = 20 + 160   (6) 40 + ☐ = 30 + 150

7) 70 + 110 = ☐ + 60   (8) 20 + 160 = ☐ + 50   (9) 50 + 130 = ☐ + 70

10) 180 + 0 = 80 + ☐   (11) 180 + 0 = 60 + ☐   (12) 180 + 0 = 10 + ☐

13) ☐ + 45 = 155 + 25   (14) ☐ + 170 = 5 + 175   (15) ☐ + 35 = 45 + 135

16) 5 + ☐ = 55 + 125   (17) 95 + ☐ = 105 + 75   (18) 111 + ☐ = 121 + 59

19) 112 + 68 = ☐ + 48   (20) 117 + 63 = ☐ + 43   (21) 118 + 62 = ☐ + 42

22) 174 + 6 = 54 + ☐   (23) 176 + 4 = 56 + ☐   (24) 179 + 1 = 59 + ☐

25) ☐ + 72 = 12 + 168   (26) ☐ + 54 = 34 + 146   (27) ☐ + 43 = 53 + 127

28) 112 + ☐ = ☐ + 112   (29) 180 + ☐ = ☐ + 120   (30) 90 + ☐ = ☐ + 90

Some things to think about

a + b = c + d is a mathematical equation like the ones above.
- If the number a is made smaller what must happen to the number b?
- If the number c is made larger what must happen to the number d?
- If both of the numbers a and b are made smaller, what must happen to the addition c + d?
- If a + b = 180, what numbers can c and d be?

Exercise 8 – Mystery Boxes #360

This exercise uses number properties and you **should not have to add** anything!

What to do

1)   Do the problems in your head and record your answers.
2)   Be prepared to say how you got your answer.

What number in the box makes these number equations TRUE

1) $\Box + 240 = 140 + 220$ (2) $\Box + 210 = 130 + 230$ (3) $\Box + 100 = 270 + 90$

4) $190 + \Box = 130 + 230$ (5) $220 + \Box = 200 + 160$ (6) $40 + \Box = 30 + 230$

7) $250 + 110 = \Box + 90$ (8) $180 + 180 = \Box + 80$ (9) $50 + 210 = \Box + 70$

10) $360 + 0 = 60 + \Box$ (11) $360 + 0 = 90 + \Box$ (12) $360 + 0 = 180 + \Box$

13) $\Box + 45 = 295 + 65$ (14) $\Box + 135 = 185 + 175$ (15) $\Box + 35 = 45 + 315$

16) $5 + \Box = 10 + 350$ (17) $95 + \Box = 105 + 255$ (18) $101 + \Box = 261 + 99$

19) $292 + 68 = \Box + 48$ (20) $297 + 63 = \Box + 43$ (21) $298 + 62 = \Box + 42$

22) $174 + 186 = 154 + \Box$ (23) $176 + 184 = 156 + \Box$ (24) $179 + 181 = 159 + \Box$

25) $\Box + 172 = 192 + 168$ (26) $\Box + 154 = 217 + 143$ (27) $\Box + 143 = 49 + 311$

28) $180 + \Box = \Box + 180$ (29) $300 + \Box = \Box + 60$ (30) $270 + \Box = \Box + 90$

31)   Write three equations of your own where both sides add to 360Try to think of harder number like this one, like this one $123 + 237 = 223 + 137$, where the numbers are not simply reversed.
Explain how you made up the additions (sums) on each side, and how you made sure they equalled 360

Some things to think about

- In the equation   a + b = 360, if the number a is made bigger what happens to the number b?

In the equation a + b = c + d,

- If the number a is made bigger how do you make sure that addition on the other side of the equal sign, c + d, is still equal to the addition a + b?
- If the number b is made smaller, how do you make sure that addition on the other side of the equal sign, c + d, is still equal to the addition a + b?

Exercise 9 – Multiplying Angles

The number 360 is a very flexible number with a large number of factors. Use your knowledge of multiplying to find the answers to these problems

What to do
1) Do the problems in your head and record your answers.
2) Be prepared to say how you got your answer.

What number in the box makes these number equations TRUE

1) $90 \times \square = 360$ (2) $180 \times \square = 360$ (3) $45 \times \square = 360$

4) $\square \times 30 = 360$ (5) $\square \times 60 = 360$ (6) $\square \times 15 = 360$

7) $2 \times \square = 360$ (8) $3 \times \square = 360$ (9) $4 \times \square = 360$

10) $\square \times 5 = 360$ (11) $\square \times 6 = 360$ (12) $\square \times 8 = 360$

13) $9 \times \square = 360$ (14) $10 \times \square = 360$ (15) $12 \times \square = 360$

16) $\square \times 15 = 360$ (17) $\square \times 18 = 360$ (18) $\square \times 20 = 360$

19) $2 \times \square = 180$ (20) $3 \times \square = 180$ (21) $45 \times \square = 180$

22) $\square \times 6 = 180$ (23) $\square \times 30 = 180$ (24) $\square \times 90 = 180$

25) $2 \times \square = 270$ (26) $3 \times \square = 270$ (27) $6 x \square = 270$

28) $\square \times 4 = 90$ (29) $\square \times 3 = 90$ (30) $\square \times 10 = 90$

For each of the problems above there are two division facts.
For example 45 x 4 = 180

and 180 divided by 45 = 4   or 180 divided by 4 = 45

Write down eight problems from above and write one division fact for each one.

Exercise 10 – Angles by Paper Folding

You need some paper and a protractor. You can use used paper if you wish because we are folding not writing. You might use a ruler and a pencil.

What you are to do is fold the paper in clever ways to make the angles. You can check the size of the angle with the protractor if you know how. Ask for help if you do not know how to use the protractor or get a friend and figure it out.

Fold the paper to make these angles.

1)	90°	(2)	45°	(3)	22.5°
4)	60°	(5)	30°	(6)	15°
7)	135°	(8)	120°	(9)	150°
10)	270°	(11)	225°	(12)	315°
13)	330°	(14)	300°	(15)	240°
16)	180°	(17)	210°	(18)	7.5°

Here are some really hard angles to fold.

19)	72°	(20)	36°	(21)	144°
22)	20°	(23)	40°	(24)	160°
25)	50°	(26)	100°	(27)	75°
28)	12°	(29)	24°	(30)	36°

Notes and secret tricks
1. Use a circular piece of paper

Exercise 11 – Bearings and Angles

You need some paper, a pencil, a ruler, a compass, a friend and a desk.

A bearing is a three digit number like 045 which means 45 degrees East of North. North is 000 and turning to the right is getting bigger through East 090 and South 180 and West 270 and back to North which can also be 360. No bearings are ever bigger than 360.

It is a tradition and is also expected that when you say a bearing you say all three digits that make up the bearing. The bearing of South would be ONE EIGHT ZERO. The reason for this is so that two people can exchange ideas effectively even when there is a lot of noise or radio reception is very poor.

Task 1
Draw a circle with N for North and 000 at the top. Divide your circle into 16 equal parts by finding South, West, East and then the half angles NE, SE, SW and NW and then the halves between these angles NNE, ENE, ESE, SSE, SSW, WSW, WNW and NNW.
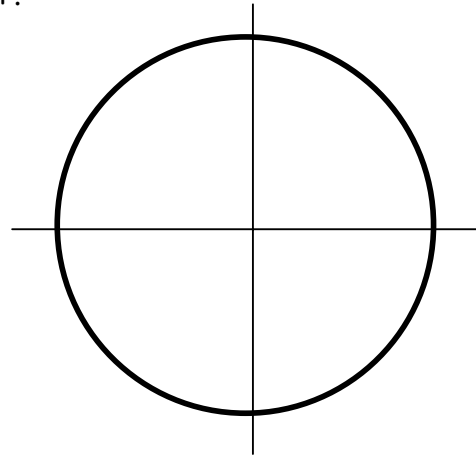
Task 2
What bearings are these compass points?

S	SE	SSE	ESE	WSW
E	ENE	NE	ESE	SSE
W	SW	NW	WNW	WSW

Task 3
This is a research task. You are to find out what a **compass rose** is and present the idea in an interesting way to your class. A good place to start would be Google.

Task 4
This is also a research task but may well be a bit harder to find the information. In the grand old days of sailing ships the sailors had names for all the main points on the compass. These were female names and told the sailors of the mood of the weather that came from these directions. Your task is to **find the names of the winds** and present a interesting talk to your class.

Good luck from the wind Mariah

Exercise 12 – Phonetic Alphabet and Morse Code

This activity is really for fun but if you can memorise and learn these they may well be very useful one day.

The Phonetic Alphabet

This is a way of saying the alphabet so that words can be spelt out letter by letter.

A = alpha, B = bravo, C= charlie, D = delta, E= echo, F = foxtrot, G= golf, H = hotel, I = india, J = juliet, K= kilo, L = lima, M= mike, N= november, O= oscar, P = papa Q = quebec, R = romeo, S = sierra, T = tango, U = uniform, V = victor, W = whiskey Y = yankie, Z = zulu

and the numbers

1 = wun, 2 = too, 3 = thu-ree, 4 = fow-er, 5 = fife, 6 = six, 7 = sev-en, 8 = eight 9 = nine-er, 10 = ten

Task 1.

Say your name and other words to each other in phonetics.

For example if your name is **Bill** you will say   **bravo – india – lima – lima**

List the words you say to each other here.

Morse Code

Samuel Morse invented this code. It is not used a lot now but is a fun way to communicate. Sounds can be made to go 'dit' and 'dah' and lights can be made to "flash short" and 'flash long". You can think up other clever ways as well.

A = . _ or dot dash or short long.

B = _ . . .   C = _ . _ .   D = _ . .   E = .   F = _ . _ _   G = _ _ .   H = ...
I = . .   J = . _ _ _   K = _ . _   L = . _ . .   M = _ _   N = _ .
O = _ _ _   P = . _ _ .   Q = _ _ . _   R = . _ .   S = . . .   T = _   U = . _ _
V = . _ _ _   W = . _ _   X = _ . . _   Y = . . _ .   Z = _ _ . .

and the numbers which are much more systematic and in groups of 5 dots and dashes.

1 = . _ _ _ _   2 = . . _ _ _   3 = . . . _ _   4 = ... _   5 = ...
6 = _ . . . .   7 = _ _ . . .   8 = _ _ _ . .   9 _ _ _ _ .   0 = _ _ _ _ _

Task 2

Using 'dit' and 'dah' spell out your name and some other words to your friend.

For example Bill would sound like

"dah-dit-dit-dit   dit–dit   dit-dah-dit-dit   dit-dah-dit-dit

Number in Geometry
Answers

Exercise 1 - Quatre-vingt-dix

1)	60	(2)	40	(3)	20
4)	55	(5)	35	(6)	15
7)	65	(8)	45	(9)	25
10)	60	(11)	30	(12)	0
13)	80	(14)	70	(15)	50
16)	85	(17)	75	(18)	10
19)	68	(20)	58	(21)	38
22)	32	(23)	52	(24)	62
25)	2	(26)	13	(27)	24
28)	89	(29)	81	(30)	71

Complement of a number is the value that needs to be added to the number so that the sum is 90.

French 90 means $4 \times 20 + 10$

A quarter turn means to rotate or twist through 90 degrees. It does matter which way as result means you face in opposite directions.

Left turn means a 90 degree rotation anticlockwise. Right turn means a 90 degree rotation clockwise. Not only applied to marching or on the parade ground but to directions and operation of equipment.

Exercise 2 - Un cent'totto

1)	150	(2)	90	(3)	30
4)	160	(5)	100	(6)	40
7)	140	(8)	80	(9)	20
10)	130	(11)	70	(12)	10
13)	170	(14)	120	(15)	110
16)	175	(17)	165	(18)	5
19)	155	(20)	25	(21)	45
22)	135	(23)	125	(24)	115
25)	5	(26)	8	(27)	168
28)	147	(29)	47	(30)	69

Supplement of a number is the value that needs to be added to the number so that the sum is 180.

One hundred and eighty

No. Note when angles are measured positive is anticlockwise.

About turn means turn 180 degrees anticlockwise.

2 quarter turns make a half turn

A backbearing is the bearing plus 180 and will return the explorer to the starting point. Eg setting out on a course of 125 or 35˚S of E for 5 km will get the explorer to a point A. To return along the same route the explorer walks for 5 km on a bearing of 125+180=305 or 55˚ W of N.

Exercise 3 - Adding to 360

1)	180	(2)	200	(3)	170
4)	260	(5)	160	(6)	60
7)	220	(8)	120	(9)	20
10)	140	(11)	240	(12)	40
13)	90	(14)	270	(15)	300
16)	315	(17)	225	(18)	125
19)	135	(20)	35	(21)	235
22)	342	(23)	322	(24)	32
25)	15	(26)	115	(27)	215
28)	353	(29)	283	(30)	183

Full turn is to rotate 360˚ either to right or left or clockwise or anticlockwise. Note anticlockwise is chosen to be a positive anglular turn.

Factors of 360 are {1,2,3,4,5,6,8,9,10,12,15,18,20,24,30,36,40,45,60,72,90,120,180,360} These are all the unique combinations of the prime factors 1, 2, 2, 2, 3, 3, 5.

4 right turns = 1 full turn, 4 left turns = 1 full turn

2 clockwise half turns = 1 full turn and 2 anticlockwise half turns = 1 full turn

NO! "Only 5 days holiday". YES! "Cool! 5 days holiday!"

Exercise 4 - Adding to 90, 180, 270 and 360 Combo

1)	90	(2)	270	(3)	180
4)	330	(5)	150	(6)	30
7)	315	(8)	115	(9)	45
10)	90	(11)	135	(12)	45
13)	150	(14)	120	(15)	10
16)	165	(17)	135	(18)	65
19)	180	(20)	90	(21)	135
22)	60	(23)	120	(24)	30
25)	45	(26)	35	(27)	55
28)	30	(29)	60	(30)	45
31)	70	(32)	50	(33)	40
34)	65	(35)	15	(36)	25

720, 1080, 1440, 1800, 2160, 2520, 2880, 3240, 3600, 7200, 36,000

Exercise 5 - The factors of 90, 180 and 360

Factors of 12 {1,2,3,4,6,12}

We know this is a complete list because we worked from the ends to the middle testing each number. Eg 1x12, 2x6, 3x4 and we are in the middle.

Factors of 90

{1,2,3,5,6,9,10,15,18,30,45,90}

Factors of 180

{1,2,3,4,5,6,8,10,12,15,18,30,36,45,90,180}

Factors of 360

{1,2,3,4,5,6,8,9,10,12,15,18,20,24,30,36,40,45,60,72,90,120,180,360}

Colour - various. F90 is a subset of F180 is a subset of F360.

360 is a good choice because of all the factors and the easy associated arithmetic that this allows.

Any other number with a lot of factors would be as good. Eg 216, 1080, 600, 240, 480.

Exercise 6 - Mystery Boxes #90

1)	60	(2)	70	(3)	80
4)	80	(5)	70	(6)	60
7)	50	(8)	40	(9)	20
10)	40	(11)	30	(12)	80
13)	25	(14)	20	(15)	50
16)	85	(17)	80	(18)	69
19)	42	(20)	47	(21)	48
22)	36	(23)	34	(24)	31
25)	18	(26)	36	(27)	47
28)	78 or any number	(29)	no answer	(30)	45 or any number

Right turn means rotate 90˚ clockwise or -90.
Left turn means rotate 90˚ anticlockwise or +90
Postive is chosen to mean anticlockwise. It is chosen to be that way. (Probably because of the right handed coordinate system x,y,z in which the x axis rotates about the origin towards the y axis and the z axis increases out of the page).

Exercise 7 - Mystery Boxes #180

1)	50	(2)	60	(3)	80
4)	70	(5)	60	(6)	160
7)	120	(8)	130	(9)	110
10)	100	(11)	120	(12)	170
13)	135	(14)	10	(15)	145
16)	175	(17)	85	(18)	69
19)	132	(20)	137	(21)	138
22)	126	(23)	124	(24)	121
25)	108	(26)	126	(27)	137
28)	68 or any number	(29)	no answer	(30)	90 or any number

b must increase if a is made smaller
d must decrease if c is made larger
c+d must be made smaller
c and d can be any two numbers that add to 180

Exercise 8 - Mystery Boxes #360

1)	160	(2)	150	(3)	280
4)	170	(5)	140	(6)	220
7)	270	(8)	280	(9)	190
10)	300	(11)	270	(12)	180
13)	315	(14)	225	(15)	325
16)	355	(17)	265	(18)	259
19)	312	(20)	317	(21)	318
22)	206	(23)	204	(24)	201
25)	188	(26)	206	(27)	217
28)	180 or any number	(29)	no answer	(30)	no answer

If a is made bigger b must decrease
If a is made bigger, c or d is made bigger by the same amount as a (or both are changed, but the overall change has to equal the amount of change to a)
If b is made smaller, c or d is made smaller by the same amount as b (or both are changed, but the overall change has to equal the amount of change to a)
124+234=224+136, 122+238=222+138, 120+240=220+140 or similar. In this set, the idea is to see compensation.

Exercise 9 - Multiplying angles

1)	4	(2)	2	(3)	8
4)	12	(5)	6	(6)	24
7)	180	(8)	120	(9)	90
10)	72	(11)	60	(12)	45
13)	40	(14)	36	(15)	30
16)	24	(17)	20	(18)	18
19)	90	(20)	60	(21)	4
22)	30	(23)	6	(24)	2
25)	135	(26)	90	(27)	45
28)	22.5	(29)	30	(30)	9

Eight like

$9 \times 40 = 360$ therefore $360 \div 40 = 9$

Exercise 10 - Angles by Paper Folding

90° is made by folding once and then folding along the fold. Others have various methods. A good idea is to use a circlular piece of paper and apply circle geometry properties. Check with protractor.

Exercise 11 - Bearings and Angles

Bearings

S=180, SE=135, etc

Wind names various.

Exercise 12 - Phonetic Alphabet and Morse Code

A is for 'orses, Beef or mutton, Sea for swimming, Differential, Eva Gabor, eFfervenscense, G for horses, H for dropping, Iffel Tower, Jaffa oranges, Kaye for a kiss, L for leather, eMmpasis, iN for a dig, Over the garden wall, Pee for a penny, Que for billards, 'alf a mo, S for bends, Tea for two, You for me, Viva l'amor, Double you or nothing, X for breakfast, Y for Christ's sake, Zephyr breeze.

Electronic supply shops and games/science activity shops have Morse Code kits.