

SHARP

Worksheet 11 Memorandum: Geometry of 2D Shapes

Grade 8 Mathematics

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|----|----|----------------------|-----|-------|-----|-----------------------|-----|--------|
| 1. | 1. | Equilateral triangle | → h | → v | 2. | Isosceles triangle | → g | → viii |
| | 3. | Scalene triangle | → d | → iii | 4. | Right-angled triangle | → f | → ix |
| | 5. | Parallelogram | → i | → ii | 6. | Rectangle | → a | → x |
| | 7. | Square | → b | → iv | 8. | Rhombus | → j | → vi |
| | 9. | Trapezium | → e | → i | 10. | Kite | → c | → vii |

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|----|----|---------|----|-----------|
| 2. | a) | Similar | b) | Congruent |
| | c) | Similar | d) | Neither |

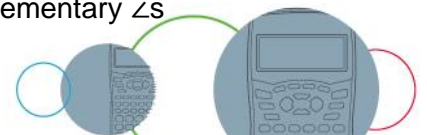
3. In congruency all sides and all angles need to be the same on both shapes (both size and shape stay the same), in similarity only the angles need to be the same (the shape stays the same but the size of the shape changes)

- 4.
- a) All equilateral triangles are similar. - True
 - b) All scalene triangles are similar. – False – Not all scalene triangles are similar
 - c) All rectangles are squares. – False, all squares are rectangles
 - d) All squares are rhombi. - True
 - e) A shape that is congruent to another shape will also be similar to that shape. - True

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|----|----|---------------------------------------|---|
| 5. | a) | STATEMENT | REASON |
| | | a = 60° | Equilateral Δ |
| | | $b + 60^\circ + 19^\circ = 180^\circ$ | Sum of \angle s in $\Delta = 180^\circ$ |
| | | b = 101° | |



b)	STATEMENT	REASON
	$c + c + 70^\circ = 180^\circ$	Isosceles Δ & Sum of \angle s in $\Delta = 180^\circ$
	$2c = 110^\circ$	
	$c = 55^\circ$	
	$d = 70^\circ$	Opp. \angle s in a rhombus are =
c)	STATEMENT	REASON
	$e + e + 90^\circ = 180^\circ$	Isosceles Δ & Sum of \angle s in $\Delta = 180^\circ$
	$2e = 90^\circ$	
	$e = 45^\circ$	
	$90^\circ + 45^\circ + 16^\circ + f = 180^\circ$	Sum of \angle s in $\Delta = 180^\circ$
	$f = 29^\circ$	
	$g + 16^\circ + 29^\circ = 180^\circ$	Sum of \angle s in $\Delta = 180^\circ$
	$g = 135^\circ$	
d)	STATEMENT	REASON
	$h = 69^\circ$	Isosceles Δ
	$i + 69^\circ + 69^\circ = 180^\circ$	Sum of \angle s in $\Delta = 180^\circ$
	$i = 42^\circ$	
	$42^\circ + j = 57^\circ$	Adjacent \angle s
	$j = 15^\circ$	
	$k + 83^\circ + 15^\circ = 180^\circ$	Sum of \angle s in $\Delta = 180^\circ$
	$k = 82^\circ$	
e)	STATEMENT	REASON
	$l = 60^\circ$	Equilateral Δ
	$m + 60^\circ = 90^\circ$	Adjacent \angle s or complementary \angle s



$$m = 30^\circ$$

$$30^\circ + n + n = 180^\circ$$

$$2n = 150^\circ$$

$$n = 75^\circ$$

$$60^\circ + 90^\circ + 75^\circ + o = 360^\circ$$

$$o = 135^\circ$$

Isosceles Δ & Sum of \angle s in $\Delta = 180^\circ$

Sum of \angle s in quadrilateral = 360°

f) STATEMENT

REASON

$$p + p + 90^\circ = 180^\circ$$

Sum of \angle s in $\Delta = 180^\circ$ and Isos Δ

$$2p = 90^\circ$$

$$p = 45^\circ$$

$$q = 4.12 \text{ units}$$

Isos Δ

g) STATEMENT

REASON

$$r + 42^\circ + 113^\circ = 180^\circ$$

Sum of \angle s in $\Delta = 180^\circ$

$$r = 25^\circ$$

$$s + 25^\circ = 53^\circ$$

Adjacent angles

$$s = 28^\circ$$

$$t + 25^\circ + 28^\circ = 180^\circ$$

Sum of \angle s in $\Delta = 180^\circ$

$$t = 127^\circ$$

h) STATEMENT

REASON

$$u + 121^\circ = 180^\circ$$

\angle s on a str. Line

$$u = 59^\circ$$

$$v + 59^\circ + 59^\circ = 180^\circ$$

Sum of \angle s in $\Delta = 180^\circ$

$$v = 62^\circ$$



i)	STATEMENT	REASON
	$w + 42^\circ = 68^\circ$	Adjacent \angle s
	$w = 26^\circ$	
	$x + 112^\circ + 42^\circ = 180^\circ$	Sum of \angle s in $\Delta = 180^\circ$
	$x = 26^\circ$	
	$y = 112^\circ$	opp. \angle s in parallelogram are equal.
	$z + 26^\circ + 112^\circ = 180^\circ$	Sum of \angle s in $\Delta = 180^\circ$
	$z = 42^\circ$	

