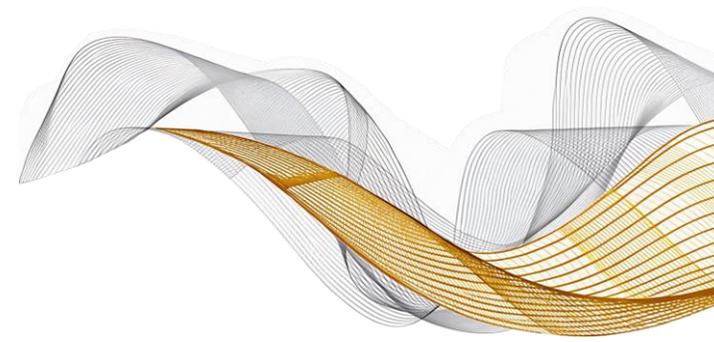


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Please include all the signs

DN-A1

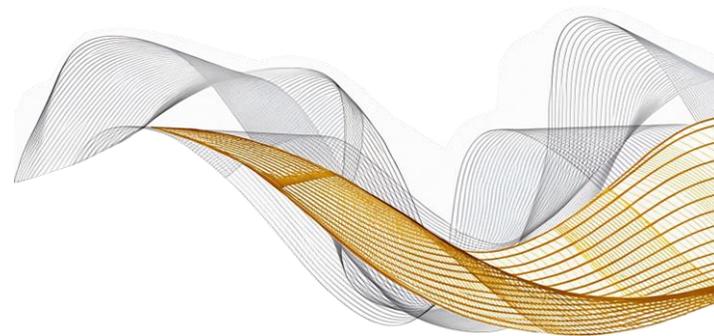


#	1		2		3		4		5		6		7	
1	$+2 + 2 =$	*	$-2 - 4 =$		$+1 + 6 =$		$+3 + 3 =$		$+2 + 8 =$		$-1 - 9 =$		$+3 + 7 =$	
2	$+6 + 2 =$		$-6 - 4 =$		$+6 + 9 =$		$-3 - 2 =$		$+3 + 8 =$		$-2 - 9 =$		$+7 + 2 =$	
3	$+1 + 2 =$		$-1 - 4 =$		$+6 + 2 =$		$+1 + 3 =$		$+4 + 8 =$		$-0 - 0 =$		$+1 + 7 =$	
4	$+5 + 2 =$		$-2v - 2v$		$+0 + 6 =$		$-3 - 0 =$		$+1 + 8 =$		$-4 - 9 =$		$+0 + 3 =$	
5	$+7 + 2 =$		$-7 - 4 =$		$+3 + 6 =$		$+3 + 6 =$		$+5 + 8 =$		$-5 - 9 =$		$+7 + 6 =$	
6	$+4 + 2 =$		$-4 - 4 =$		$+6 + 5 =$		$-8 - 3 =$		$+6 + 8 =$		$-6 - 1 =$		$+8 + 7 =$	
7	$+3 + 2 =$		$-3 - 4 =$		$+6 + 4 =$		$+3 + 7 =$		$7 + 8 =$		$-7 - 9 =$		$+7 + 7 =$	
8	$+0 + 2 =$		$-0 - 4$		$+9 + 6 =$		$-9 - 3 =$		$+8 + 8 =$		$-8 - 9 =$		$+9 + 7 =$	
9	$+9 + 2 =$		$-9 - 4 =$		$+6 + 7 =$		$+3 + 4 =$		$+9 + 8 =$		$-9 - 9 =$		$+a + a =$	
10	$+8 + 2 =$		$-8 - 4 =$		$+8 + 6 =$		$-9 - 3 =$		$+8 + 9 =$		$-0 - 9 =$		$+3 + 3 =$	
11	$+4 + 0$		$-2 - 5 =$		$+9 + 2 =$		$+1 + 4 =$		$+2 + 7 =$		$-3 - 8 =$		$+9 + 7 =$	
12	$+6 + 3 =$		$-6 - 5 =$		$+2 + 2 =$		$-4 - 9 =$		$+3 + 7 =$		$-8 - 2 =$		$+8 + 9 =$	
13	$+s + s$		$-5 - 9 =$		$+3 + 2 =$		$+4 + 2 =$		$+4 + 7 =$		$-6 - 2 =$		$+5 + 1 =$	
14	$+5 + 3 =$		$-k - k =$		$+0 + 2 =$		$-0 - 4 =$		$+5 + 7 =$		$-8 - 8 =$		$+4 + 9 =$	
15	$+7 + 3 =$		$-5 - 4 =$		$+2 + 9 =$		$+3 + 4 =$		$+6 + 7 =$		$-9 - 9 =$		$+3 + 9 =$	
16	$+4 + 3 =$		$-3 - 5 =$		$+8 + 2 =$		$-4 - 5 =$		$+7 + 7 =$		$-7 - 8 =$		$+9 + 2 =$	
17	$+3 + 5$		$-2 - 5$		$+2 + 6 =$		$+4 + 4 =$		$+8 + 7 =$		$-8 - 5 =$		$+8 + 1 =$	
18	$+0 + 3 =$		$-5 - 5 =$		$+2 + 3 =$		$-9 - 4 =$		$+9 + 7 =$		$-i - i =$		$+0 + 2 =$	
19	$+9 + 1 =$		$-7 - 5 =$		$+1 + 2 =$		$+4 + 7 =$		$+1 + 7 =$		$-1 - 8 =$		$+7 + 9 =$	
20	$+8 + 3 =$		$-1 - 5 =$		$+2 + 5 =$		$-8 - 4 =$		$+0 + 7 =$		$-3 - 4 =$		$+0 + 0 =$	*

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Please include all the signs

DN-A2

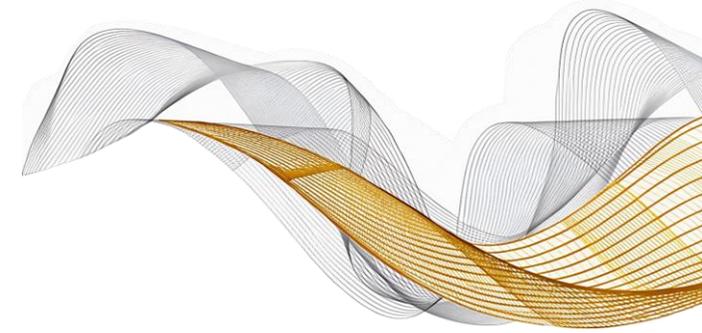


#	1	2	3	4	5	6	7
1	$+7 + 5 = *$	$-2j - 4j =$	$+a + 6 =$	$+b + 3b =$	$+t + t =$	$-1 - 9 =$	$+2 + 1 =$
2	$+5p + 1 =$	$-h - 4 =$	$+6 + b =$	$-3 - 2 =$	$+u + 8u =$	$-1 - 2 =$	$+8 + 2 =$
3	$+8 + 3 =$	$-1 - 5 =$	$+6 + 2 =$	$+0 + 3 =$	$+v + 8v =$	$-3i - 9 =$	$+1 + 1 =$
4	$+4 + 2t =$	$-5 - 8 =$	$+c + c =$	$-5 - 0 =$	$+w + 8w =$	$-3 - 4 =$	$+0 + 2 =$
5	$+6 + 2 =$	$-2 - k =$	$+d + e =$	$+4 + 6 =$	$+x + 8x =$	$-2 - 0 =$	$+0 + b =$
6	$+7 + 1y =$	$-4 - 0 =$	$+f + 5 =$	$-8 - 5 =$	$+y + 8 =$	$-6p - 9u =$	$+h + h =$
7	$+2 + 2 =$	$-3g - 2g =$	$+6 + g =$	$+3 + 2 =$	$z + z =$	$-1 - 1 =$	$+y + y =$
8	$+m + 2 =$	$-0 - 4 =$	$+9 + 6 =$	$-1 - 3 =$	$+y + 8 =$	$-8 - 9 =$	$+9 + 1 =$
9	$+6 + 0 =$	$-5 - 4 =$	$+h + h =$	$+2 + 1 =$	$+f + f =$	$-9j - 9s =$	$+0 + 1 =$
10	$+1 + h =$	$-1 - 1 =$	$+i + 6 =$	$-2 - 3 =$	$+h + f =$	$-0 - 9 =$	$+3 + 1 =$
11	$+1f + 0f =$	$-x - x =$	$+j + 2 =$	$+1 + 2 =$	$+2s + 7s =$	$-1 - 3 =$	$+g + g =$
12	$+j + j =$	$-h - 5 =$	$+2k + 1k =$	$-4 - j =$	$+r + 7 =$	$-6j - 1k =$	$+4g + 4g =$
13	$+4 + 1 =$	$-t - k =$	$+l + 2 =$	$+5 + 2 =$	$+4 + y =$	$-8 - 4 =$	$+5 + 1 =$
14	$+5p + 1 =$	$-m - jy =$	$+0 + m =$	$-0 - 2 =$	$+ys + ys =$	$-5t - 5t =$	$+p + p =$
15	$+a + a =$	$-i - i =$	$+2 + 9 =$	$+3h + 4h =$	$+2 + l =$	$-5 - 3 =$	$+3 + 2 =$
16	$+2 + 9 =$	$-3 - 5 =$	$+n + 2 =$	$-4h - 5h =$	$+c + c =$	$-1 - 6 =$	$+5p + 1p =$
17	$+5 + 4 =$	$-1 - 3 =$	$+2 + p =$	$+4 + 4 =$	$+n + m =$	$-2u - 5u =$	$+1 + 1 =$
18	$+g + 3 =$	$-4 - 5 =$	$+2q + 3q =$	$-9 - 4s =$	$+j + 5 =$	$-3 - 1 =$	$+0 + 3 =$
19	$+2g + 2g =$	$-1 - 5 =$	$+r + 2r =$	$+4 + 7a =$	$+2 + 7 =$	$-9j - 8j =$	$+5p + 1 =$
20	$+5 + 1 =$	$-1f - 5f =$	$+s + s =$	$-2 - 4 =$	$+0 + 5 =$	$-4s - 4s =$	$+1 + 0 = *$

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Please include all the signs

DN-M1

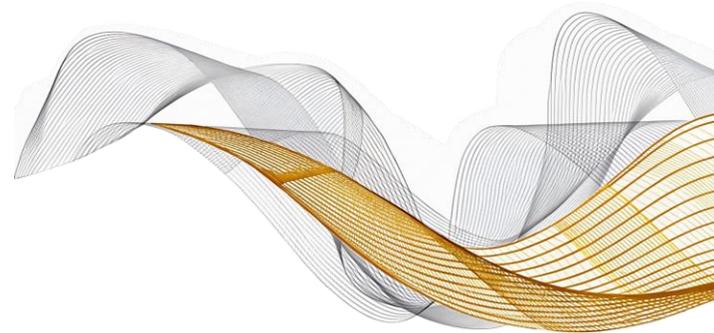


#	1		2		3		4		5		6		7	
1	$-2 + 2 =$	*	$+2 - 4 =$		$-1 + 6 =$		$+3 + 3 =$		$-2 + 8 =$		$+1 - 9 =$		$+7 - 3 =$	
2	$+6 - 2 =$		$-6 + 4 =$		$-6 + 9 =$		$-3 - 2 =$		$-3 + 8 =$		$+2 - 9 =$		$+7 - 2 =$	
3	$-1 + 2 =$		$+1 - 4 =$		$+6 - 2 =$		$+1 - 3 =$		$-4 + 8 =$		$+3 - 9 =$		$-1 + 7 =$	
4	$+5 - 2 =$		$-5 + 4$		$-0 + 6 =$		$-3 - 0 =$		$-1 + 8 =$		$+4 - 9 =$		$+7 - 0 =$	
5	$+7 - 2 =$		$-7 + 4 =$		$-3 + 6 =$		$+3 + 6 =$		$-5 + 8 =$		$+5 - 9 =$		$+7 - 6 =$	
6	$+4 - 2 =$		$-4 + 4 =$		$+6 - 5 =$		$-8 + 3 =$		$-6 + 8 =$		$+6 - 9 =$		$+8 - 7 =$	
7	$+3 - 2 =$		$+3 - 4 =$		$+6 - 4 =$		$-3 + 7 =$		$-7 + 8 =$		$+7 - 9 =$		$-7 + 7 =$	
8	$-0 + 2 =$		$+0 - 4 =$		$+9 - 6 =$		$+9 - 3 =$		$-8 + 8 =$		$+8 - 9 =$		$+9 - 7 =$	
9	$+9 - 2 =$		$-9 + 4$		$-6 + 7 =$		$+3 - 4 =$		$+9 - 8 =$		$-9 + 9 =$		$+x - x =$	
10	$+8 - 2 =$		$-8 + 4 =$		$+8 - 6 =$		$-9 - 3 =$		$-8 + 9 =$		$+0 - 9 =$		$+7 - 5 =$	
11	$-2 + 3 =$		$+2 - 5 =$		$+9 - 2 =$		$-1 + 4 =$		$-2 + 7 =$		$+3 - 8 =$		$+9 - 7 =$	
12	$+6 - 3 =$		$-6 + 5 =$		$+2 - 2 =$		$-4 - 9 =$		$-3 + 7 =$		$-8 + 2 =$		$-8 + 9 =$	
13	$-1 + 3 =$		$+5 - 9 =$		$+3 - 2 =$		$+4 + 2 =$		$-4 + 7 =$		$-6y + 2y =$		$-6 + 9 =$	
14	$+5s - 3s$		$+5 - 8 =$		$-0 + 2 =$		$-0 + 4 =$		$-5 + 7 =$		$+8 - 8 =$		$-4 + 9 =$	
15	$+7 - 3 =$		$-5 + 4 =$		$-2 + 9 =$		$-3 + 4 =$		$-6 + 7 =$		$-9 + 9 =$		$-3 + 9 =$	
16	$+4 - 3$		$+3 - 5 =$		$+8 - 2 =$		$-4 + 5 =$		$+7 - 7 =$		$+7 - 8 =$		$-2 + 9 =$	
17	$+3 - 3 =$		$+2 - 5 =$		$-2 + 6 =$		$+4 - 4 =$		$+8 - 7 =$		$-8 + 5 =$		$-1 + 9 =$	
18	$-0 + 3$		$+5 - 5 =$		$-2 + 3 =$		$+9 - 4 =$		$+9 - 7 =$		$-8 + 2 =$		$-0 + 9 =$	
19	$+9 - 3 =$		$-7 + 5$		$-1 + 2 =$		$-4 + 7 =$		$-1 + 7 =$		$+1 - 8 =$		$-7 + 9 =$	
20	$+8 - 3 =$		$+1 - 5 =$		$-2 + 5 =$		$-8 - 4 =$		$-0 + 7 =$		$+3 - 4 =$		$+9 - 7 =$	*

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Please include all the signs

DN-M2

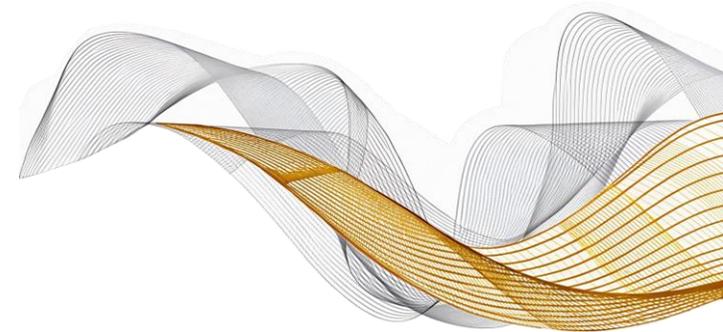


#	1		2		3		4		5		6		7	
1	$-2 + 3 =$	*	$+2 - 1 =$		$-1 + 5 =$		$+3 + 2 =$		$-2 + 5 =$		$+9 - 9 =$		$+2a - a =$	
2	$+6 - 4 =$		$-6 + 2 =$		$-6 + 3 =$		$-1 - 2 =$		$-3 + 3 =$		$+b - b =$		$+6 - 2 =$	
3	$-a + 2 =$		$+1 - 54 =$		$+k - 2 =$		$+v - 3v =$		$-4 + 2v =$		$+2 - 9 =$		$-6 + 7 =$	
4	$+5 - 1 =$		$-5 + 2 =$		$-2 + 6 =$		$-1 - 0 =$		$-1 + 88 =$		$+a - a =$		$+5 - 0 =$	
5	$+3 - 2 =$		$-60 + 4 =$		$-3 + 4 =$		$+3 + 4 =$		$-5 + 8 =$		$+3 - 3 =$		$+7 - 5 =$	
6	$+4b - 2b =$		$-3h + 3h =$		$+hs - hs =$		$-k + 3 =$		$-6 + 2 =$		$+2 - 2 =$		$+5 - 7 =$	
7	$+p - 2 =$		$+3 - 1 =$		$+4 - 4 =$		$-2n + 7 =$		$-7a + a =$		$+j - j =$		$-5 + 7 =$	
8	$-0 + 2 =$		$+5 - 4 =$		$+2 - 6 =$		$+9 - 3n =$		$-8 + 8 =$		$+g - g =$		$+4b - 4 =$	
9	$+3 - 5 =$		$-6 + 4 =$		$-6 + 2 =$		$+2 - 4 =$		$+2 - 8 =$		$-2h + 2h =$		$+5 - 4 =$	
10	$+6 - 4 =$		$-w + 4w =$		$+j - 6 =$		$-7 - 3 =$		$-8 + 9 =$		$+0 - 0 =$		$+h - h =$	
11	$-1 + 5 =$		$+n - 5n =$		$+z - 2z =$		$-b + 4b =$		$-2 + 5 =$		$+p - p =$		$+2z - 3z =$	
12	$+f - f =$		$-rt + 5rt =$		$+2 - 2 =$		$-b - b =$		$-3b + b =$		$-e + 2e =$		$-4 + 9 =$	
13	$-1 + 6 =$		$+4 - 9 =$		$+3n - 2 =$		$+y + 2 =$		$-1v + 7v =$		$-g + t =$		$-s + 9 =$	
14	$+u - 2u =$		$+5 - 5 =$		$-0 + 2p =$		$-0 + j =$		$-5y + 7y =$		$+2t - 2t =$		$-4 + 2 =$	
15	$+3 - 3 =$		$-2 + 4 =$		$-2c + 9C =$		$-3 + 5 =$		$-6 + 4 =$		$-u + u =$		$-p + 3p =$	
16	$+4 - 2 =$		$+m - 5 =$		$+8 - 2 =$		$-4 + i =$		$+7 - 7 =$		$+q - q =$		$-3 + 9 =$	
17	$+y - 3y =$		$+2 - 2 =$		$-2C + 6C =$		$+4 - 4 =$		$+8 - 2 =$		$-l + l =$		$-1 + 7 =$	
18	$-0 + 1 =$		$+b - 5 =$		$-2v + 3v =$		$+8 - 4 =$		$+6 - 7 =$		$-n + 2n =$		$-0 + 2t =$	
19	$+4 - 3 =$		$-e + 5e =$		$-1r + 2r =$		$-4 + 3 =$		$-0 + 7 =$		$+k - k =$		$-7 + 4 =$	
20	$+5 - 3 =$		$+1q - 5q =$		$-2b + 5 =$		$-2 - 4 =$		$-777 + 7 =$		$+l - v =$		$+2 - 7 =$	*

X SAME

Please include all the signs

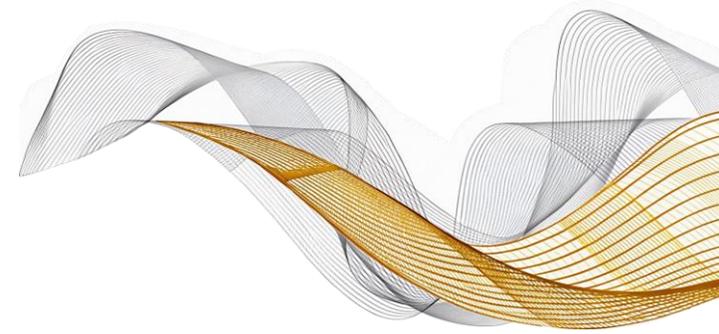
DN-MU1



#	1		2		3		4		5		6		7	
1	$+2x+2 =$	*	$-2x-2 =$		$+(+2) =$		$-(-2) =$		$-5(-2) =$		$-1(-2) =$		$+7(+2) =$	
2	$+6x+2 =$		$-6x-2 =$		$-(-9) =$		$+(+2) =$		$-6(-2) =$		$-2(-2) =$		$+3(+2) =$	
3	$+1x+2 =$		$-1x-2 =$		$+(+2) =$		$-(-2) =$		$-7(-2) =$		$-3(-2) =$		$+2(+6) =$	
4	$+5x+2 =$		$-5x-2 =$		$-(-2) =$		$+7(+2) =$		$-8(-2) =$		$-4(-2) =$		$+2(+4) =$	
5	$+7x+2 =$		$-7x-2 =$		$+(+2) =$		$+3(+2) =$		$-2(-2) =$		$-5(-2) =$		$+2(+5) =$	
6	$+4x+2 =$		$-2x-2 =$		$-(-5) =$		$+2(+6) =$		$-0(-2) =$		$-6(-2) =$		$+4(+2) =$	
7	$+3x+2 =$		$-3x-2$		$+(+4) =$		$+2(+4) =$		$-3(-1) =$		$-7(-2) =$		$+1(+2) =$	
8	$+0x+2 =$		$-0x-2 =$		$-(-4) =$		$+2(+5) =$		$-1(-8) =$		$-8(-2) =$		$+2(+0) =$	
9	$+9x+2 =$		$-9x-2 =$		$+(+7) =$		$+4(+2) =$		$-2(-2) =$		$-2(-2) =$		$+2(+9) =$	
10	$+8x+2 =$		$-8x-2$		$-(-2) =$		$-1(-2) =$		$-7(-1) =$		$-0(-2) =$		$+1(+1) =$	
11	$+2x+3 =$		$-2x-1 =$		$+(+2) =$		$-1(-2) =$		$-1(-5) =$		$-3(-1) =$		$+9(+1) =$	
12	$+6x+1 =$		$-6x-1 =$		$-(-2) =$		$-1(-8) =$		$-2x-2 =$		$-1(-2) =$		$+5(+1) =$	
13	$+1x+1 =$		$-1x-9 =$		$+(+8) =$		$-2(-2) =$		$-3x-2 =$		$-1(-2) =$		$+1(+3) =$	
14	$+5x+1 =$		$-1x-8 =$		$+(+0) =$		$+1(+3) =$		$-0x-2 =$		$-1(-8) =$		$+4(+1) =$	
15	$+7x+1 =$		$-1x-4 =$		$-(-9) =$		$+4(+1) =$		$-9x-2 =$		$-2(-2) =$		$+1(+5) =$	
16	$+4x+1$		$-3x-1 =$		$+(+7) =$		$+1(+5) =$		$-8x-2 =$		$-7(-1) =$		$+2(+9) =$	
17	$+3x+1 =$		$-2x-1$		$-(-2) =$		$-(-9) =$		$-4(-2) =$		$-1(-5) =$		$+1(+0) =$	
18	$+0x+1 =$		$-1x-1 =$		$+(+3) =$		$+(+7) =$		$-5(-2) =$		$-8(-1) =$		$+0(+2) =$	
19	$+9x+1$		$-7x-1 =$		$+(+6) =$		$-(-2) =$		$-6(-2) =$		$-1(-8) =$		$+7(+1) =$	
20	$+8x+1$		$-1x-1 =$		$-(-5) =$		$+(+3) =$		$-7(-2) =$		$-3(-4) =$		$+9(+1) =$	*

X SAME

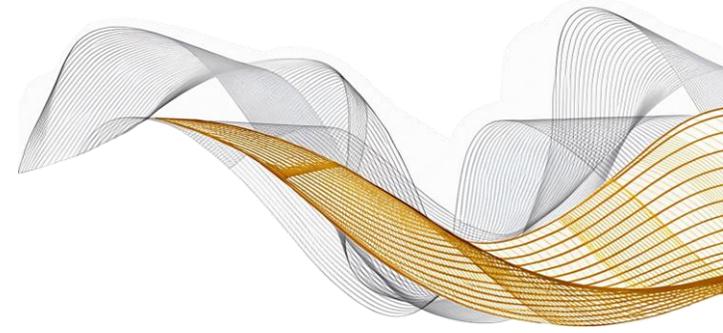
Please include all the signs

DN-MU2

#	1		2		3		4		5		6		7	
1	$+4x + 2 =$	*	$-9x - 2 =$		$+(+ud) =$		$-(-j) =$		$-5(-2) =$		$-1(-3) =$		$+7(+1) =$	
2	$+6x + 4 =$		$-6x - 9 =$		$-(-i) =$		$+(+3) =$		$-6(-6) =$		$-7(-2) =$		$+3(+7) =$	
3	$+1x + 4 =$		$-1x - 9 =$		$+(+vc) =$		$-(-9) =$		$-7(-2) =$		$-3(-9) =$		$+x(+x) =$	
4	$+5x + 4 =$		$-5x - 9 =$		$-(-v) =$		$+7(+8) =$		$-8(-2) =$		$-7(-2) =$		$+7(+4) =$	
5	$+7x + 4 =$		$-7x - 9 =$		$+(+n) =$		$+3(+3) =$		$-7(-2) =$		$-6(-2) =$		$+7(+5) =$	
6	$+4x + 4 =$		$-2x - 2 =$		$-(-z) =$		$+2(+8) =$		$-0(-8) =$		$-6(-2) =$		$+7(+2) =$	
7	$+3x + 4 =$		$-3x - 9 =$		$+(+x) =$		$+2(+4) =$		$-3(-7) =$		$-3(-2) =$		$+7(+6) =$	
8	$+0x + 2 =$		$-0x - 9 =$		$-(-g) =$		$+2(+5) =$		$-8(-8) =$		$-3(-2) =$		$+7(+0) =$	
9	$+9x + 4 =$		$-9x - 2 =$		$+(+h) =$		$+4(+4) =$		$-7(-2) =$		$-2(-3) =$		$+7(+9) =$	
10	$+8x + 4 =$		$-8x - 2 =$		$-(-q) =$		$-1(-4) =$		$-7(-1) =$		$-0(-4) =$		$+x(+x) =$	
11	$+5x + 3 =$		$-9x - 1 =$		$+(+i) =$		$-1(-3) =$		$-1(-8) =$		$-1(-1) =$		$+8(+1) =$	
12	$+5x + 1 =$		$-6x - 9 =$		$-(-u) =$		$-1(-8) =$		$-2x - 7 =$		$-1(-2) =$		$+5(+8) =$	
13	$+1x + 5 =$		$-7x - 9 =$		$+(+y) =$		$-2(-1) =$		$-3x - 8 =$		$-1(-8) =$		$+8(+3) =$	
14	$+5x + 1 =$		$-9x - 8 =$		$+(+p) =$		$+1(+4) =$		$-0x - 7 =$		$-1(-8) =$		$+4(+8) =$	
15	$+7x + 5 =$		$-9x - 4 =$		$-(-n) =$		$+4(+6) =$		$-9x - 2 =$		$-9(-2) =$		$+8(+6) =$	
16	$+4x + 5 =$		$-3x - 9 =$		$+(+m) =$		$+1(+5) =$		$-8x - 2 =$		$-7(-1) =$		$+8(+9) =$	
17	$+3x + 5 =$		$-9x - 1 =$		$-(-k) =$		$-(-4) =$		$-3(-2) =$		$-1(-3) =$		$+8(+0) =$	
18	$+0x + 5 =$		$-7x - 1 =$		$+(+j) =$		$+(+3) =$		$-5(-2) =$		$-4(-1) =$		$+0(+8) =$	
19	$+9x + 5 =$		$-7x - 6 =$		$+(+b) =$		$-(-2) =$		$-6(-7) =$		$-7(-8) =$		$+8(+8) =$	
20	$+8x + 5 =$		$-1x - 6 =$		$-(-c) =$		$+(+3) =$		$-7(-8) =$		$-7(-4) =$		$+9(+1) =$	*

X ÷ DIFFERENT

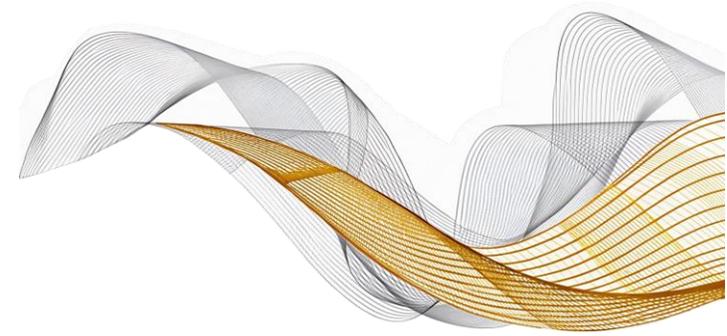
Please include all the signs

DN-MDX1

#	1		2		3		4		5		6		7	
1	$+2 \div -2 =$	*	$+2 x -2 =$		$+(-2) =$		$-3 -2 =$		$-5(-2) =$		$-1(+2) =$		$-7(+2) =$	
2	$+6 \div -2 =$		$-6 x +2 =$		$-(-9) =$		$+(-2) =$		$-6(-2) =$		$+2(-2) =$		$-3(+2) =$	
3	$-1 x +2 =$		$+1 x -2 =$		$+(-2) =$		$-9 + (2) =$		$-7 -2 =$		$+3(-2) =$		$+2(-6) =$	
4	$+5 x -2 =$		$+5 x -2 =$		$-(+2) =$		$+7(+2) =$		$-8 +2 =$		$-4(+2) =$		$-2(+4) =$	
5	$-7 x +2 =$		$-7 x +2 =$		$+(-2) =$		$+3(-2) =$		$+2 -2 =$		$+5(-2) =$		$+2(-5) =$	
6	$-4 x +2 =$		$+2 \div -2 =$		$-(-5) =$		$+2(+6) =$		$-0 +2 =$		$-6(+2) =$		$-4(+2) =$	
7	$+3 x -2$		$-3 x +2 =$		$+(+4) =$		$+2 +4 =$		$-3 -1 =$		$+7(-2) =$		$+1(-2) =$	
8	$+0 x -2 =$		$+0 x -2 =$		$-(-4) =$		$+2(+5) =$		$-1 -8 =$		$-8(+2) =$		$-2(+0) =$	
9	$-9 x +2 =$		$+9 \div -2 =$		$+(-7) =$		$+4(-2) =$		$-2 -2 =$		$-2(+2) =$		$+2(-9) =$	
10	$+8 x -2 =$		$-8 \div +2 =$		$-(+2) =$		$-1(-2) =$		$-7 +1 =$		$+0(-2) =$		$+1(-1) =$	
11	$-2 x +3 =$		$-2 \div +1 =$		$+(+2) =$		$-1 -2 =$		$-1(-5) =$		$-3(+1) =$		$-9(+1) =$	
12	$-6 x +1 =$		$+6 \div -1 =$		$-(-2) =$		$-1 +8 =$		$-2 -9 =$		$-1(+2) =$		$-5(+1) =$	
13	$+1 x -1 =$		$+1 \div -9 =$		$+(-8) =$		$-2(-2) =$		$-3 x -2 =$		$+1(-2) =$		$+1(-3) =$	
14	$-5 x +1$		$-1 \div +8 =$		$+(+0) =$		$+1 +3 =$		$-0 x -2 =$		$+1(-8) =$		$-4(+1) =$	
15	$+7 x -1 =$		$+1 \div -4 =$		$-(+9) =$		$+4(-1) =$		$-9 x -2 =$		$-2(+2) =$		$+1(-5) =$	
16	$-4 x +1 =$		$+3 \div -1 =$		$-(+7) =$		$+1(-5) =$		$-8 x -2 =$		$+7(-1) =$		$-2(+9) =$	
17	$+3 x -1 =$		$-2 \div +1 =$		$+(-2) =$		$-(+9) =$		$-4 -2 =$		$-1(+5) =$		$+1(-0) =$	
18	$-0 x +1 =$		$+1 \div -1 =$		$+(-3) =$		$-(+7) =$		$+5 +2 =$		$+8(-1) =$		$+0(-2) =$	
19	$+9 x -1$		$-7 \div +1 =$		$+(-6) =$		$-(+2) =$		$-6 -2 =$		$-1(+8) =$		$-7(+1) =$	
20	$-8 x +1 =$		$+1 \div -1 =$		$+(-5) =$		$+(+3) =$		$-7 +2 =$		$+3(-4) =$		$+9(-1) =$	*

X ÷ DIFFERENT

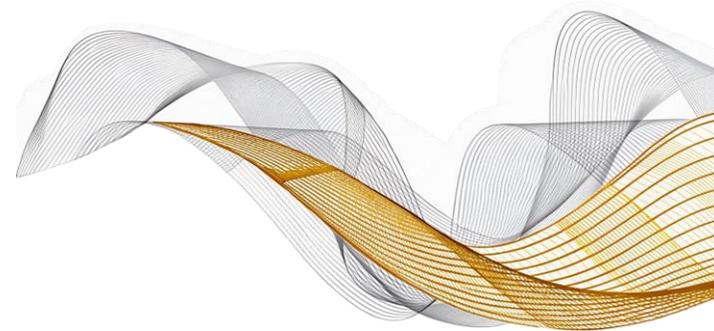
Please include all the signs

DN-MDX2

#	1		2		3		4		5		6		7	
1	$-2x - 2 =$	*	$-2j \div +2 =$		$-6(-2) =$		$-0(-2) =$		$-5 - 2 =$		$x/4x + 4$		$+14 \div -2$	
2	$-6x + 2 =$		$-6 \div -2 =$		$-5(-9) =$		$+5k \div +5k$		$-6 + 2 =$		$-2 \div +2 =$		$-3(-2) =$	
3	$+1x + 2 =$		$-10m \div -2$		$+7(+2) =$		$-2d \div -2d$		$-7(+2) =$		$+3 + 2 =$		$+2(-6) =$	
4	$+5 - 2 =$		$-15y \div -3$		$-6g \div -2$		$+7n - 7n =$		$-8(-2) =$		$-4 - 2 =$		$-4x + 4x =$	
5	$-7x + 2 =$		$+10p \div -2$		$+6y - 6y$		$-3s + 3s =$		$+2(+2)$		$-5 + 2 =$		$-2 - 5 =$	
6	$-4 - 2 =$		$-2p + 2p =$		$-7t + 7t =$		$-2z(+0) =$		$-0(-2) =$		$+6 - 2 =$		$-4 + 2 =$	
7	$+3 - 2 =$		$-3x - 2 =$		$+8i - 8i =$		$+0(+wk4)$		$-3 - 1 =$		$-7 - 2 =$		$+1 + 2 =$	
8	$0x + 2 =$		$-0x - 2 =$		$-8i \div -4$		$+2(-5) =$		$+1 - 8 =$		$+8t \div +2$		$-2(+0) =$	
9	$-9 + 2 =$		$-9 - 2 =$		$+4 + 7 =$		$-4a \div -4a$		$-2 - 2 =$		$-9(+6) =$		$+2(-9) =$	
10	$-8 \div -2 =$		$-8 + 2 =$		$-4x - 2 =$		$-(-1) =$		$-7 + 1 =$		$-0(+2)$		$-15n \div -5$	
11	$+2x + 3 =$		$-2 - 1 =$		$-3(-7) =$		$-1 - 2 =$		$-1 - 5 =$		$-30q + 5$		$-9(-1) =$	
12	$-6x - 1 =$		$-6x - 1 =$		$-4 - 2 =$		$+1 - 8 =$		$-8x - 2 =$		$-7 - 2 =$		$-5n + 5n =$	
13	$+13y - 13y$		$-1x - 9 =$		$+(-8) =$		$-2 - 2 =$		$-3x - 2 =$		$+9 - 2 =$		$+1(-3) =$	
14	$-5 + 1 =$		$+1 - 8 =$		$-(+0) =$		$+3b - 3b =$		$-0x - 2 =$		$-5 - 8 =$		$-3b \div +3 =$	
15	$-7 - 1 =$		$-1x - 4 =$		$-6 \div +3 =$		$-4r + 4r =$		$-9 - 2 =$		$-4h \div -2$		$+1 - 5 =$	
16	$-4 \div +1 =$		$-3 - 1 =$		$-81 \div +9$		$+ (+5) =$		$-8 - 2 =$		$-7(-1) =$		$-2(-9) =$	
17	$-3x + 3x =$		$-2 + 1 =$		$- (+2) =$		$- (-9) =$		$-4 + 2 =$		$-5b + 5b$		$-1 + 9 =$	
18	$+0x + 1 =$		$-10f \div -5$		$-4(+8) =$		$+ (-7) =$		$-5 - 2 =$		$-8k + 8k$		$+0(+2) =$	
19	$-9x - 1 =$		$-7x - 1 =$		$+7 + 6 =$		$-8t \div -2$		$-6(-2) =$		$-1 - 8 =$		$-7 - 1 =$	
20	$+8 - 1 =$		$-1x - 1 =$		$u/2x2$		$+6a \div -3$		$-7(+2) =$		$-3(+4) =$		$+9 + 1 =$	*

X ÷ ±

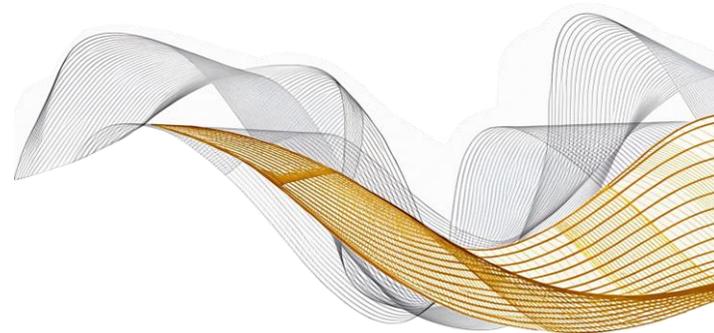
Please include all the signs

DN-X1

#	1		2		3		4		5		6		7	
1	-5h ÷ -5 *		+3a - 3a =		+1(-2) =		-3h ÷ -3h =		-5(-2) =		-1 + 2 =		-7b + 7b =	
2	+6r ÷ + 2 =		-6x + 2 =		-(-9) =		+5b(0) =		-6(-2) =		+(-2) =		-3k + 3k =	
3	-8x + 2 =		+1x - 2 =		+(-2) =		-9h ÷ -9h =		-7 - 2 =		+3 - 2 =		+2u - 2u =	
4	-x/5 x 5 =		-5x - 2 =		-9 + 2 =		+7v - 7v =		-8 + 2 =		-4 + 2 =		-4b ÷ -4b	
5	-7v ÷ v =		-7 + 2 =		+4 - 2 =		+3z - 3z =		+2a - 2a =		+5 - 2 =		+2u ÷ -2u =	
6	-4x + 2 =		+2u ÷ -2 =		-3 - 5 =		+2(+0) =		-0 + 2 =		-6(+2) =		-4p + 4p =	
7	+3a - 3a =		-3x + 2 =		+7 + 4 =		+21 ÷ +21 =		+3x - 1 =		+7(-2) =		+1n(-0) =	
8	+0x - 2t =		+0x - 2 =		+3a - 3a =		+8a ÷ -8 =		-1 - 8 =		-8(+2) =		-x/5 + 5 =	
9	-9 + 2 =		+9s ÷ -3 =		+4d - 4d =		+4(-0) =		-2x - 2 =		-2 + 2 =		+x/8 x 8 =	
10	+8 - 2 =		-8 ÷ -2 =		-3f + 3f =		-5t + 5t =		-7 + 1 =		+0(-2) =		+1(-0) =	
11	-2 + 3 =		-4 ÷ +2 =		+4 + 2 =		-8g + 8g =		-1(-5) =		-30 ÷ +5 =		-9(+1) =	
12	-6 - 5 =		+6 ÷ -3 =		-6(-2) =		-1h + 1h =		-2 - 9 =		-1(+2) =		-5(+1) =	
13	+7 - 7 =		-18 ÷ -9 =		+7(-8) =		-21 ÷ -21 =		-3x - 2 =		-6 - 2 =		+3 - 3 =	
14	-5x - 1 =		-1 + 8 =		+k(+0) =		-3 + 3 =		-0x - 2 =		+18 ÷ -8 =		-4k + 4k =	
15	+7x - 1 =		-1 - 4 =		-(-9) =		+1j - 1j =		-9 - 2 =		-10a ÷ -5 =		+5z - 5z =	
16	-4b ÷ +2		+3 - 1 =		-9 + 7 =		+0(-5) =		-8x - 2 =		+7(-1) =		-2(+9) =	
17	-6d ÷ -d =		-2p ÷ +2 =		-5(-2) =		-56 ÷ +56 =		-4 - 2 =		-1(+5) =		+a(-0) =	
18	-0x + u		+1a - 1a =		+8 - 3 =		-2a + 2 =		+5 + 2 =		+8 - 1 =		+0(-2) =	
19	-9x - 1 =		-7h + 7h =		+2 - 6 =		-(+0) =		-6 - 2 =		-1x + 8 =		-7 + 7 =	
20	-8x + 6 =		+18 ÷ -9 =		-3 - 5 =		+4(-3) =		-7 + 2 =		+x/2 (2) =		+9a - 9a = *	

X ÷ ±

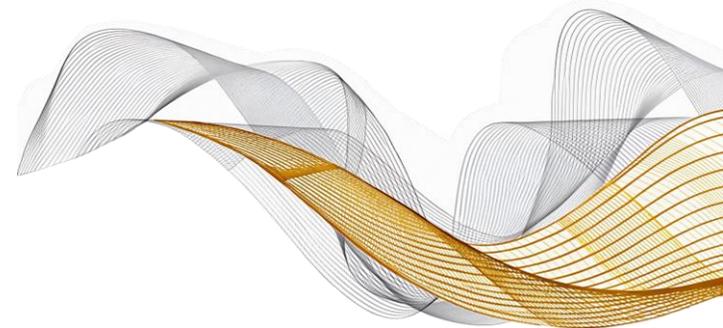
Please include all the signs

DN-X2

#	1		2		3		4		5		6		7	
1	$-5h \div -2$	*	$+3s - 3s =$		$+1(-b) =$		$-3g \div -3g =$		$-5(-4) =$		$-1 + 4 =$		$-3b + 3b =$	
2	$+3r \div + 2 =$		$-6x + 2 =$		$-(-8) =$		$+5b(1) =$		$-6(-4) =$		$+(-7) =$		$-3p + 3p =$	
3	$-8x + 4 =$		$+0x - 2 =$		$+(-7) =$		$-9t \div -9 =$		$-7 - 4 =$		$+3 - 7 =$		$+2t - 3u =$	
4	$-x/5x 10 =$		$-7x - 2 =$		$-5 + 2 =$		$+7v - 7 =$		$-8 + 4 =$		$-4 + 7 =$		$-8b \div -4$	
5	$-7v \div v =$		$-6 + 2 =$		$+2 - 2 =$		$+2z - 3z =$		$+4a - 4a =$		$+5 - 7 =$		$+20 \div -2 =$	
6	$-8x + 2 =$		$+2u \div -2 =$		$-3 - 7 =$		$+4(+0) =$		$-0 + 4 =$		$-6(+7) =$		$-4z + 4z =$	
7	$+9a - 3a =$		$-4x + 2 =$		$+9 + 4 =$		$+7 \div +7 =$		$+3x - 1 =$		$+7(-7) =$		$+1(-0) =$	
8	$+0x - 2t =$		$+0x - 2 =$		$+a - 3a =$		$+8a \div -2 =$		$-1 - 9 =$		$-8(+7) =$		$-x/4 + 2 =$	
9	$-4 + 2 =$		$+4s \div -3 =$		$+4d - 4d =$		$+4(-3) =$		$-5x - 5 =$		$-2 + 7 =$		$-x/4x 8 =$	
10	$+6 - 2 =$		$-8 \div -16 =$		$-3e + 3e =$		$-10t + 2t =$		$-6 + 1 =$		$+0(-7) =$		$+1(-5) =$	
11	$-2 + 2 =$		$-4 \div +2 =$		$+5 + 2 =$		$-5g + 8g =$		$-1(-6) =$		$-15 \div +5$		$-8(+1) =$	
12	$-6 - 2 =$		$+5 \div -5 =$		$-7(-2) =$		$-1h + 1h =$		$-2 - 3 =$		$-1(+8) =$		$-5(+6) =$	
13	$+a - 7a =$		$-18 \div -9 =$		$+7(-2) =$		$-4 \div -3 =$		$-4x - 2 =$		$-6 - 8 =$		$+3 - 3 =$	
14	$-1x - 1 =$		$-1 + 7 =$		$+k(+0) =$		$-3 + 1 =$		$-0x - 1 =$		$+16 \div -8 =$		$-4d + 4d =$	
15	$+7x - 1 =$		$-1 - 2 =$		$- (+7) =$		$+1i - 1s =$		$-7 - 2 =$		$-15a \div -5 =$		$+5 - 5z =$	
16	$-4b \div +2$		$+4 - 1 =$		$-6 + 7 =$		$+1(-5) =$		$-6x - 2 =$		$+7(-1) =$		$-2(+1) =$	
17	$-6d \div -d =$		$-2q \div +2 =$		$-3(-2) =$		$-1 \div +6 =$		$-2 - 2 =$		$-1(+3) =$		$+a (-0) =$	
18	$-4x + u$		$+1a - 1a =$		$+7 - 3 =$		$-2a - 2 =$		$+6 + 2 =$		$+9 - 1 =$		$+0 (-1) =$	
19	$-9x - 1 =$		$-7g + 7g =$		$+2 - 5 =$		$- (+0) =$		$-1 - 2 =$		$-1x + 9 =$		$-7 + 7 =$	
20	$-9x + 9 =$		$+27 \div -9 =$		$-3 - 3 =$		$+2(-3) =$		$-7 + 3 =$		$+x/2 (4) =$		$-x/2 - 2 =$	*

X ÷ ±

Please include all the signs

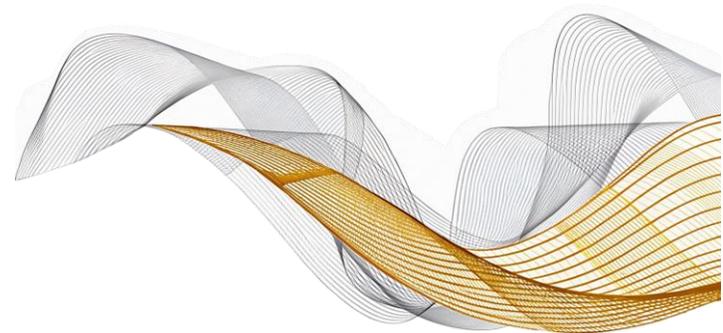
DN-MDC1

#	1		2		3		4	
1	$-2 + 1(-4) =$	*	$-18 - 4 =$		$-d + d =$		$+1(-2) - 6 - 4 =$	
2	$-3 + 6 =$		$-14 + 7 =$		$+445 - 445 =$		$(-9) + 1 + 9 =$	
3	$+8 - (-7)$		$-15 + 14 =$		$-89 + 89 =$		$(-4) + (-7) - (-8) =$	
4	$-4 + 5 =$		$-11 - 5 =$		$-D + D =$		$(-18) - (-1) =$	
5	$-2 + (-9) =$		$17 + (-18) =$		$Q + Q =$		$(-9) + 11 =$	
6	$-1 + (-8) =$		$+9 - 1(-17) =$		$-P + P =$		$+12 - 1(-2) =$	
7	$-3 + (-9) =$		$-14 - (-4) =$		$L - L =$		$+6 + 1(-2) =$	
8	$-2 + 6 =$		$-5 - (-12) =$		$-l + l =$		$+9 - 1(-7) =$	
9	$-7 + (-3) =$		$16 + (-15) =$		$-50/5 =$		$7 - (-2) - 8 =$	
10	$9 - (-5)$		$-12 - (-2) =$		$-5(-9 + 5) + 6 =$		$(-2) + (-2) + 4 =$	
11	$-1 - 4 =$		$12 - (-6) =$		$+ 25/-5 =$		$(-2) - (-2) + 5 =$	
12	$-7 - (-3) =$		$(-19) + 11 =$		$-5/10 =$		$+1(-2) - 6 - 4 =$	
13	$-8 + (-5) =$		$-6 + 1(-9) + 1(-1) =$		$-8/2 =$		$(-9) + 1 + 9 =$	
14	$-1 + (-6)$		$9 - (-4) + 1 =$		$6(3 + 5 + 4) - 4 =$		$(-4) + (-7) - (-8) =$	
15	$-5 - (-4) =$		$+1(-2) - 1(-2) + 1(-4) =$		$-(-3) + 5 =$		$3 - (-6) =$	
16	$-6 + (-1) =$		$(-2) + (-2) + 4 =$		$5(9 - 4) =$		$(-8) - (-1) =$	
17	$-5 - (-3) =$		$(-8) + 9 - (-6) =$		$-(-4x - 4) - 6 =$		$(-2) + (-2) + 4 =$	
18	$-7 + (-4) =$		$(-18) - (-1) =$		$5(8) + 3 =$		$(-8) + 9 - (-6) =$	
19	$-12 + (-18) =$		$-a + a =$		$+1(-6) + 1(-9) + 1(-1) =$		$7 - (-2) - 8 =$	
20	$-11 + (-17) =$		$b - b =$		$+9 - 1(-4) + 1 =$		$(-4) + (-7) - (-8) =$	*

X ÷ ±

Please include all the signs

DN-MDC2

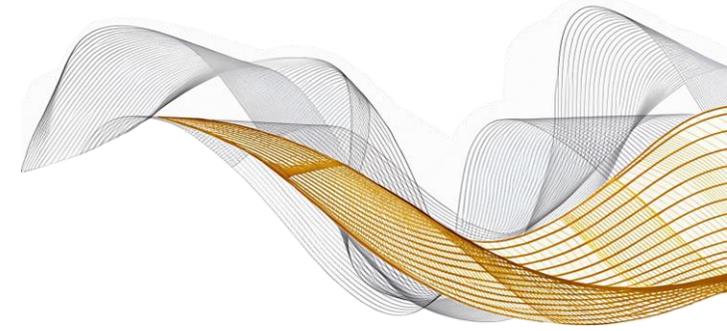


Multiply each of the following by **-1** then **simplify** as much as possible.

#	1		2	
1	$ax^2 + bx + c = 0$	*	$8x - 8x + 12y + 4y = 44 - 20$	
2	$ax^2 - bx + c = 0$		$6x - 6x - 4y + 9y = 38 - 12$	
3	$-ax^2 - bx + c = 0$		$2x - 13 = 17$	
4	$-ax^2 + bx - c = 0$		$8x - 8x + 12y + 4y = 44 - 20$	
5	$-ax^2 - bx - c = 0$		$6x - 6x - 4y + 9y = 38 - 12$	
6	$ax^2 + bx + c = -0$		$2x - 13 = 17$	
7	$2x^2 + x + 6 = 8 + 5$		$8x - 8x + 12y + 4y = 44 - 20$	
8	$ax^2 + bx + c = 0$		$6x - 6x - 4y + 9y = 38 - 12$	
9	$ax^2 - bx + c = 0$		$2x - 13 = 17$	
10	$-ax^2 - bx + c = 0$		$3x + y = 2$	
11	$-ax^2 + bx - c = 0$		$4x + 3y = 3$	
12	$-ax^2 - bx - c = 0$		$x + 1 = 2y$	
13	$ax^2 + bx + c = -0$		$3a - 2b = 12$	
14	$2x^2 + x + 6 = 8 + 5$		$2a + b = 1$	
15	$ax^2 + bx + c = 0$		$2x + y = 5$	
16	$-5x^2 + 6x - 6 = -8 + 4$		$3x - 4y = 32$	
17	$8x^2 - 4x - 6 = 8 - x$		$5x + 2y = 10$	
18	$-2x^2 - x - 6 = 0$		$3x + y = 14$	
19	$(-2) + (-8) =$		$4x - 4y = 2$	
20	$(-11) + (-7) =$		$7x + 2y = 17$	*

X ÷ ±

Please include all the signs

DN-MDC3

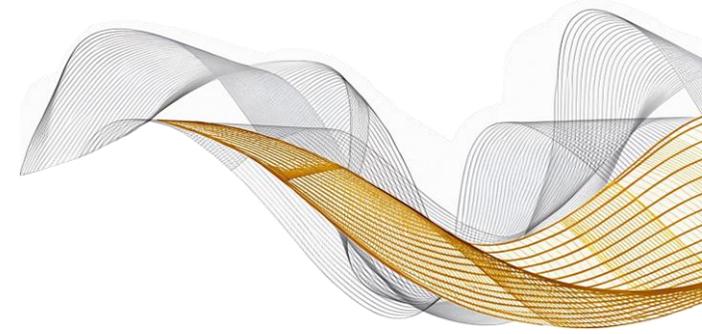
Multiply each of the following by **-1** then **simplify** as much as possible.

#	1		2	
1	$x + y = 5$	*	$2x + 2 + x + 3 + x - 1 = 50$	
2	$xy = 6$		$28 - x + 20 - x + x = 40$	
3	$2x + 3y = 11$		$250 - x + 2x + x = 400$	
4	$4x + 2y = 10$		$2x + 2 + x + 3 + x - 1 = 50$	
5	$3x - 2 = 4$		$7 - x + 35 - x + 25 - x + x = 50$	
6	$x + y \leq 12$		$30 - x + 9 - x + x + 3x = 50$	
7	$x + y \geq 50$		$31 - x + 2x + x + 10 = 55$	
8	$x + y \geq 10$		$1 + 5 + 5 + 15 + 2x + 2x = 56$	
9	$8x + 3y \leq 84$		$18 - x + 9 - x + 10 - x + 5 + 3 + x = 56$	
10	$y + y \geq 600$		$4 - x + 5 - x + 6 - x + 7 + 6 + 4 - x + x = 50$	
11	$2x + y \geq 12$		$7 - x + 35 - x + 25 - x + x = 50$	
12	$14x + 28y \leq 196$		$30 - x + 9 - x + x + 3x = 50$	
13	$x + y = 5$		$31 - x + 2x + x + 10 = 55$	
14	$xy = 6$		$8 - x + 5 - x + 9 - x + 15 + 14 + 2 = 100$	
15	$2x + 3y = 11$		$7 - (2x - 8x + 10x - 15) =$	
16	$4x + 2y = 10$		$6 - 8x + 15x - 20 =$	
17	$x + y = 5$		$8x - 8x + 12y + 4y = 44 - 20$	
18	$x + 2x = 10$		$6x - 6x + x - 4y + 9y = 38 - 12$	
19	$2x - 13 = 17$		$7 - (2x - 8x + 10x - 15) =$	
20	$x/5 - 5 = x/15 + 4$		$2(2x - 3) - (x - 4) < 4$	*

X ÷ ±

Please include all the signs

DN-MDC4

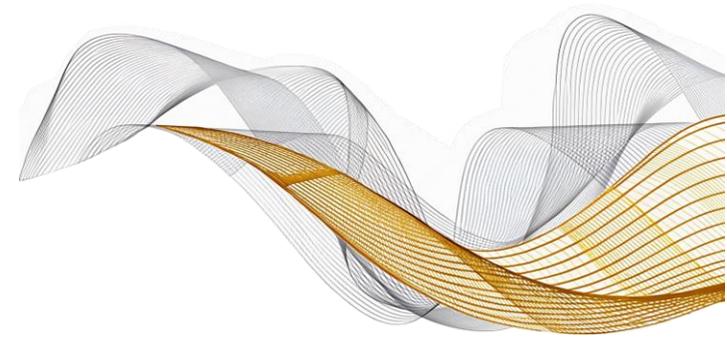


Multiply each of the following by **-1** then **simplify** as much as possible.

#	1		2	
1	$+1(-2) - 6 - 4 =$	*	$(-4) - (-4) =$	
2	$(-9) + 1 + 9 =$		$12 - (-2) =$	
3	$(-4) + (-7) - (-8) =$		$mx + 2y + 5x + 7y =$	
4	$(-18) - (-1) =$		$8x - 3y + 7y - 5x =$	
5	$(-9) + 11 =$		$-6x + 3y + 4x - 7y + 5x - 8y =$	
6	$+12 - 1(-2) =$		$7x^2 + 3y^2 - 4x^2 - 5y^2 - 8x^2 - 6y^2 =$	
7	$+6 + 1(-2) =$		$9x^2 + 5y^2 - 3x^2 - 2y^2 + 4x^2 + y^2 =$	
8	$+9 - 1(-7) =$		$5x - 15 - 3 + 6 =$	
9	$7 - (-2) - 8 =$		$mx + 2y + 5x + 7y =$	
10	$(-2) + (-2) + 4 =$		$8x - 3y + 7y - 5x =$	
11	$(-2) - (-2) + 5 =$		$-6x + 3y + 4x - 7y + 5x - 8y =$	
12	$+1(-2) - 6 - 4 =$		$x + 64 = 8x$	
13	$(-9) + 1 + 9 =$		$6x - 8(x + 3) = 10$	
14	$(-4) + (-7) - (-8) =$		$3(x + 2) - 2(x - 1) = 12$	
15	$3 - (-6) =$		$3(x) + 2(x) = 30$	
16	$(-8) - (-1) =$		$15 - 4x = 2(3x + 1) =$	
17	$(-2) + (-2) + 4 =$		$4(2) - 2(-3) + 3(0) =$	
18	$(-8) + 9 - (-6) =$		$5a^2 - ab + 5ab - b^2 =$	
19	$7 - (-2) - 8 =$		$7x - (12x^2 + 18x + 10x - 15) =$	
20	$(-4) + (-7) - (-8) =$		$6x^2 - 8x + 15x - 20 =$	*

You've got this!

ALG-S1



Carefully follow the instructions in each question, and **substitute** the given values into the **correct places** in the equations provided.

1. Given $a = 2$, $b = -3$ $c = 0$; evaluate a^c
2. Given $p = 5$, $q = 0$, $r = -3$; calculate the value $2r^3$
3. Given that $a = 2$, $b = -3$ and $c = 0$; find the value of $4a - 2b + 3c$
4. If $p = 5$, $q = 0$ and $r = -3$; calculate the value of $4p - qr$
5. Given $m = -2$ and $n = 4$; calculate the value of $(2m + n)(2m - n)$
6. If $a = 2$, $b = -3$ and $c = 4$; calculate (i). $ab - bc$ (ii). $b(a - c)^2$
7. If $a = 2$, $b = 2$ and $c = -3$; find the value of: (i). $a + b + c$ (ii). $b^2 - c^2$
8. If $a * b = a^2 - b$ evaluate; $5 * 2$
9. Calculate the value of t when $r = 2$ and $s = 15$

$$t = \frac{s}{3 + r}$$

- 10) Calculate the value of F when C is 15

$$F = \frac{9C + 160}{5}$$

- 11) If $l = -2$, $n = -3$ and $m = 4$; calculate the value of

$$\frac{m + n}{n - m}$$

- 12) If $a = 4$, $b = -2$ and $c = 3$; calculate the value of

$$\frac{a(b - c)}{bc}$$

- 13) If $a = 2$, $b = -1$ and $c = 3$; find the value of: (i). $a(b + c)$

(ii).

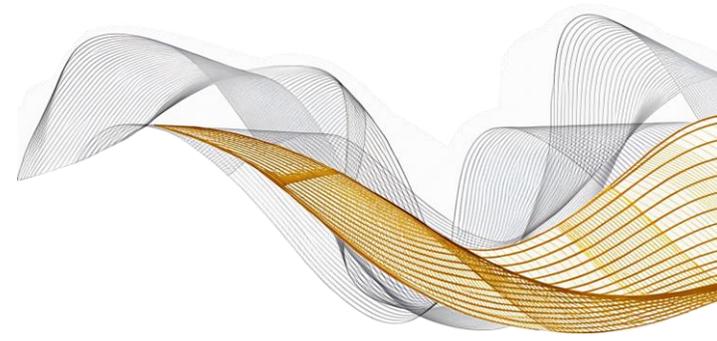
$$\frac{4b^2 - 2ac}{a + b + c}$$

- 14) Calculate the value of r , when $p = 6$ and $q = 12$; given that

$$r = \frac{2p^2}{q - 3}$$

You've got this!

ALG-S2



From the given quadratic equation, find the values of a, b and c. Plug them into the quadratic formula.

$$\frac{x = -b \pm \sqrt{b^2 - 4ac}}{2a}$$

1) $6x^2 + 11 = 10$

4) $-4x^2 + 7x + 5 = 0$

7) $r^2 - 16r - 16 = 0$

2) $-5x^2 - 7x + 3 = 0$

5) $3x^2 + 10x - 8 = 0$

8) $x^2 - 6x + 39 = 30.25$

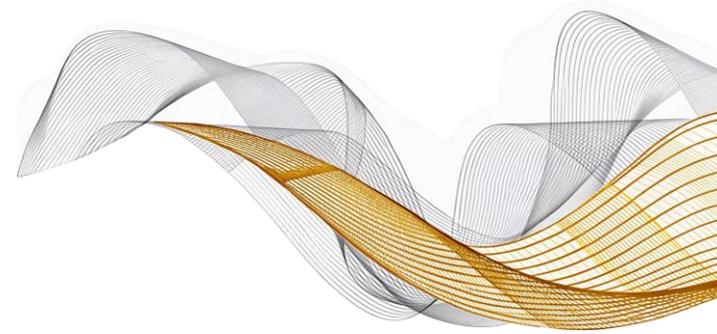
3) $3x^2 + 10x - 8 = 0$

6) $x^2 + y^2 = 24$

9) $4y^2 - 7y - 3 = 0$

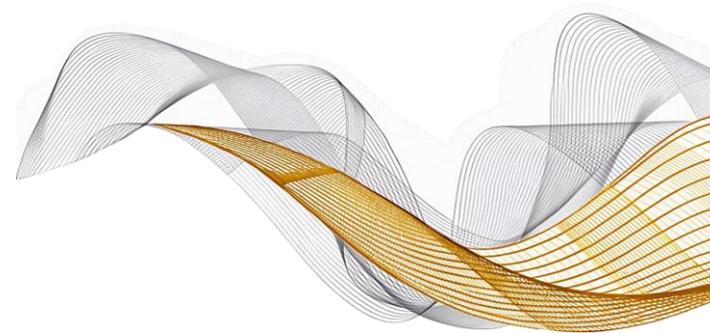
You've got this!

ALG-S3



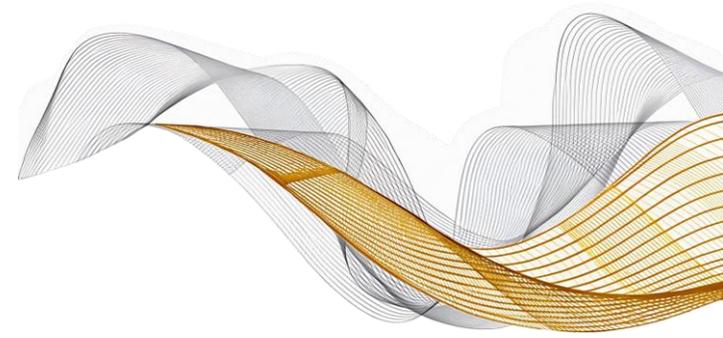
Complete the following exercises.

- 1) Write the equation $3x^2 + 10x - 8 = 0$ in the form of $a(x + h)^2 + k$, where $h = b/2a$ and $k = (4ac - b^2)/4$
- 2) Write the equation $-4x^2 + 7x + 50$ in the form of $a(x + h)^2 + k$, where $h = b/2a$ and $k = (4ac - b^2)/4$
- 3) Write $-2x^2 + 7x - 3$ in the form of $k - a(x + h)^2$ where, $h = b/2a$ and $k = (4ac - b^2)/4$
- 4) Write $3x^2 + 4x + 5$ in the form of $a(x + b)^2 + k$ where, $h = b/2a$ and $k = (4ac - b^2)/4$
- 5) Write $-2x^2 + 5x + 1$ in the form of $c + a(x + b)^2$ where, $b = b/2a$ and $c = (4ac - b^2)/4$
- 6) Write $6x^2 - 8x + 7$ in the form of $p(x + q)^2 + r$ where, $q = b/2a$ and $r = (4ac - b^2)/4$
- 7) Write $-4x^2 + 6x - 3$ in the form of $a(x + p)^2 + q$ where, $p = b/2a$ and $q = (4ac - b^2)/4$
- 8) Write the function $f(x) = 2x^2 + 6x - 3$ in the form of $a(x + h)^2 + k$ where, $h = b/2a$ and $k = (4ac - b^2)/4$
- 9) Given the function $f(x) = 4x^2 + 2x - 3$ express $f(x)$ in the form of $a(x + h)^2 + k$ where a , h and k are constants
- 10) Given $2x^2 - 4x - 9 = a(x + h)^2 + k$ for all values of x , write the equation $2x^2 - 4x - 9$ in the form of $a(x + h)^2 + k$
- 11) Write $y = 3x^2 - 2x + 1$ in the form of $a(x + p)^2 + q$
- 12) Write the function $f(x) = -3x^2 + 5x + 4$, in the form of $a(x + p)^2 + q$
- 13) Write $4x^2 + 3x + 2$ in the form of $a(x + h)^2 + k$
- 14) Write $9x^2 - 9x + 1$ in the form $a(x + b)^2 + c$, where a , b and c are real numbers
- 15) Write the expression $3x^2 - 2x - 4$ in the form $f(x) = p(x + q)^2 + r$, where p , q and r are constants
- 16) Write the expression $4x^2 - 9x + 1$ in the form $a(x + h)^2 + k$, where a , h and k are real numbers
- 17) Write $f(x) = 4x^2 - 7x + 3$ in the form $f(x) = a(x + b)^2 + c$ where a , b and c are constants
- 18) Write $3x^2 + 8x - 25$ in the form $a(x + h)^2 + k$ where a , h and k are real numbers



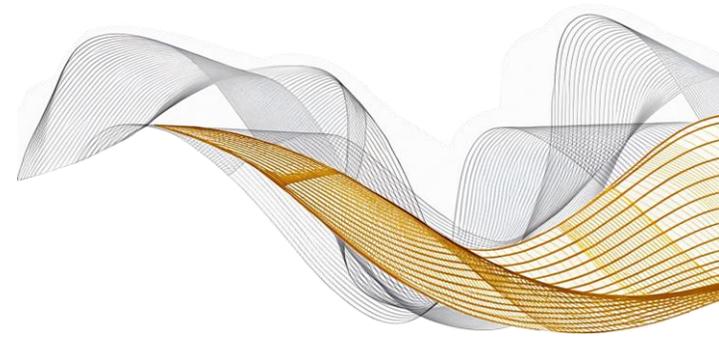
Isolate the variable shown in brackets and make it the subject of the equation.

#	1		2	
1	$C = \pi d$ (d)	*	$v^2 = 2jk$ (k)	
2	$S = \pi dn$ (d)		$d = st$ (s)	
3	$DV = c$ (V)		$I = PRT$ (R)	
4	$A = \pi rl$ (l)		$xy = 6$ (y)	*



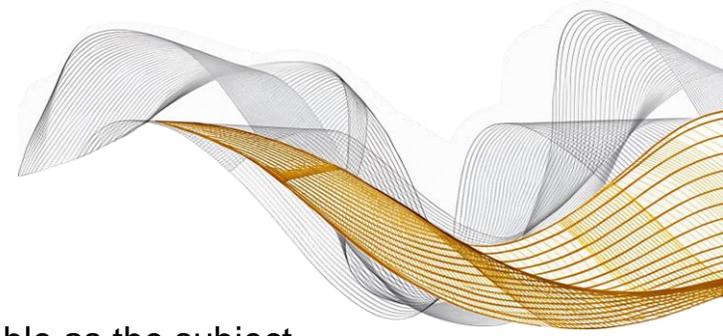
Isolate the variable shown in brackets and make it the subject of the equation.

#	1		2	
1	$x = a/y$ (y)	*	$d = 0.8667/N$ (N)	
2	$I = T/P$ (P)		$P = qp/Q$ (q)	
3	$x = u/a$ (u)		$J = MANGO/34,000$ (A)	
4	$v = 4/3\pi r$ (r)		$V = \pi d^2 h/4$ (h)	
5	$P = RT/V$ (T)		$d = 0.8667/N$ (N)	



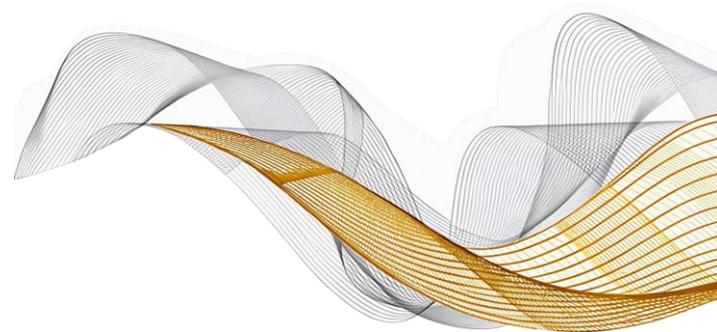
Isolate the variable shown in brackets and express the equation with that variable as the subject.

#	1		2	
1	$s = S - 18.9$ (S)	*	$2x + 2 + x + 3 + x - 1 = 50$ (x)	
2	$v = u + at$ (t)		$28 - x + 20 - x + x = 40$ (x)	
3	$n = p + rs$ (r)		$250 - x + 2x + x = 400$ (x)	
4	$g = ax + c$ (x)		$7 - x + 35 - x + 25 - x + x = 50$ (x)	
5	$y = x/6 + 19$ (x)		$30 - x + 9 - x + x + 3x = 50$ (x)	
6	$H = c + qL$ (q)		$31 - x + 2x + x + 10 = 55$ (x)	
7	$y = b - cx$ (x)		$1 + 5 + 5 + 15 + 2x + 2x = 56$ (x)	
8	$E = F - 1.36d$ (d)		$18 - x + 9 - x + 10 - x + 5 + 3 + x = 56$ (x)	*



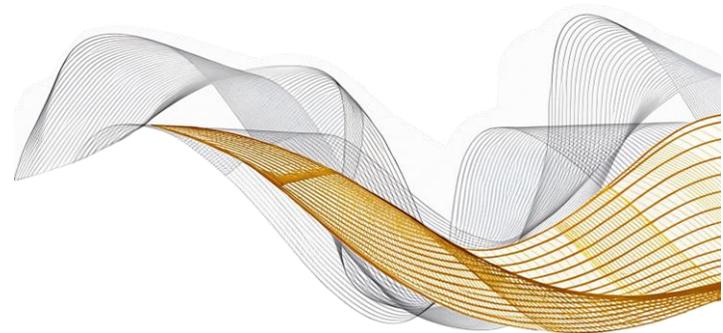
Isolate the variable shown in brackets and express the equation with that variable as the subject.

#	1		2	
1	$4 - x + 5 - x + 6 - x + 7 + 6 + 4 - x + x = 50$ (x)*		$6x - 8(x + 3) = 10$ (x)	
2	$8 - x + 5 - x + 9 - x + 15 + 14 + 2 = 100$ (x)		$3(x + 2) - 2(x - 1) = 12$ (x)	
3	$x + 2x = 10$ (x)		$3(x) + 2(x) = 30$ (x)	
4	$15 + 12 + 8 + 2x + 3 + 4 = 68$ (x)		$5 - 4x = 2(3x + 1)$ (x)	
5	$3(3x + 1) - 10(x - 1) - 35 = 0$ (x)		$4(x) - 2(-3) + 3(0) = 0$ (x)	
6	$7(5x - 2) + 3(3x + 2) - 2(2x) = 0$ (x)		$7 - (2x - 8x + 10x - 15) = 0$ (x)	
7	$2(2x - 3) - (x + 4) < 4$ (x)		$6 - 8x + 15x - 20 = 0$ (x)	
8	$x + 64 = 8x$ (x)		$8x - 8x + 12y + 4y = 44 - 20$ (x)*	



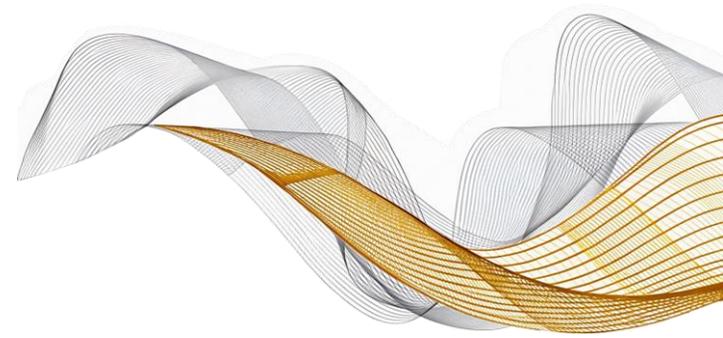
For each equation, first multiply both sides by -2 . Then isolate the variable shown in brackets and express the equation with that variable as the subject.

#	1		2	
1	$6x - 6x + x - 4y + 9y = 38 - 12$ (y) *		$3x - 4y = 32$ (x)	
2	$2x - 13 = 17$ (x)		$5x + 2y = 10$ (x)	
3	$3x + y = 2$ (y)		$3x + y = 14$ (y)	
4	$4x + 3y = 3$ (x)		$4x - 4y = 2$ (y)	
5	$x + 1 = 2y$ (y)		$7x + 2y = 17$ (x)	
6	$3a - 2b = 12$ (b)		$x + y = 5$ (y)	
7	$2a + b = 1$ (a)		$2x + 3y = 11$ (x)	
8	$2x + y = 5$ (x)		$4x + 2y = 10$ (y)	*



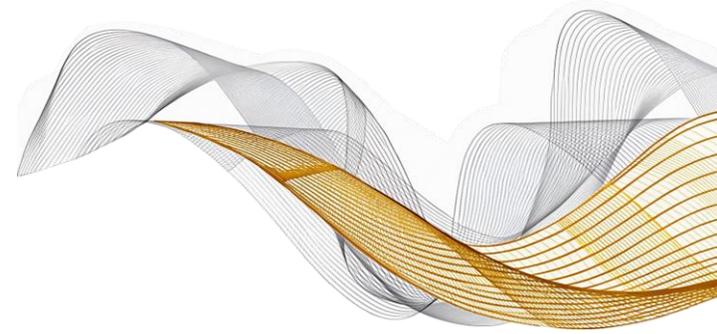
For each equation, first multiply both sides by -2 . Then isolate the variable shown in brackets and express the equation with that variable as the subject.

#	1		2	
1	$3x - 2 = 4$ (x)	*	$3x - 2 = 4$ (x)	
2	$x + y \leq 12$ (y)		$x + y \leq 12$ (y)	
3	$x + y \geq 50$ (x)		$x + y \geq 50$ (x)	
4	$x + y \geq 10$ (y)		$x + y \geq 10$ (y)	
5	$8x + 3y \leq 84$ (x)		$8x + 3y \leq 84$ (x)	
6	$y + y \geq 600$ (y)		$y + y \geq 600$ (y)	
7	$2x + y \geq 12$ (x)		$3(3x + 1) - 10(x - 1) - 35 =$ (x)	
8	$14x + 28y \leq 196$ (y)		$7(5x - 2) + 3(3x + 2) - 2(2x) =$ (x)*	



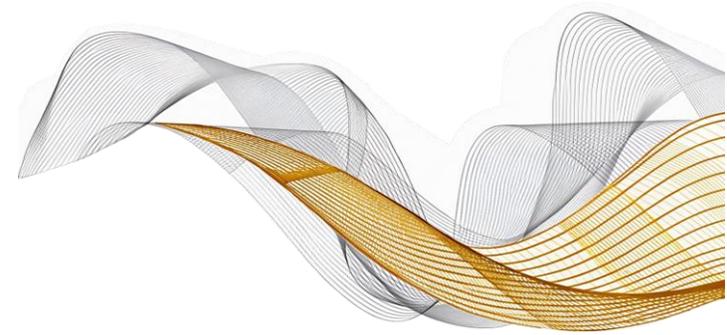
Isolate the variable shown in brackets and make it the subject of the equation.

#	1		2	
1	$N = 2R/(R-r)$ (r)	*	$Y = (M - m)/2w$ (M)	
2	$sin = O/(H-t)$ (O)		$L = [13 (G - g)]/L$ (g)	
3	$T = \pi r(r + h)$ (h)		$P = mg + mv^2/r$ (v)	
4	$Y = ws(T - t)$ (T)		$x/5 - 5 = x/15 + 4$ (x)	*



Isolate the variable shown in brackets and make it the subject of the equation.

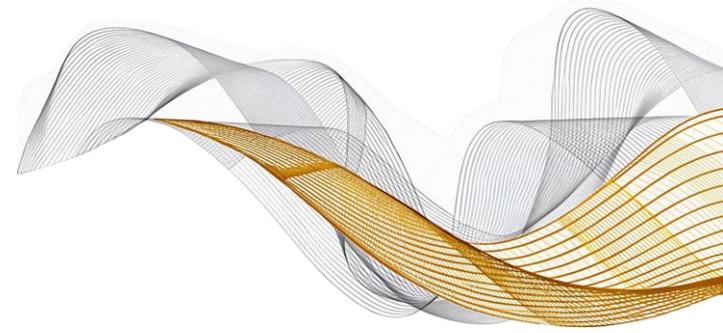
#	1		2	
1	$V = 2R/(R - r)$ (R)	*	$P - mg = mv^2/r$ (m)	
2	$Q = [S(C - H)]/C$ (C)		$2 = \text{sqrt. } [x/(x - y)]$ (x)	
3	$V = \text{sqrt. } (2gh)$ (h)		$m = (3q + 10)/(q + 5)$ (q)	
4	$u = l \text{ sqrt. } y$ (y)		$a = 3/(4t + 5)$ (t)	
5	$t = 2\pi \text{ sqrt. } (l/g)$ (g)		$v^2 = 2\pi(1/x - 1/a)$ (x)	
6	$t = 2\pi \text{ sqrt. } (M/gf)$ (f)		$e = 3(S - an)/n(n - l)$ (a)	
7	$r = \text{cube root } 3v/4\pi$ (v)		$u = 2 \text{ sqrt. } (2hr - h^2)$ (r)	
8	$v = 4/3 \pi r^3$ (r)		$x = dh/(D - d)$ (d)	*



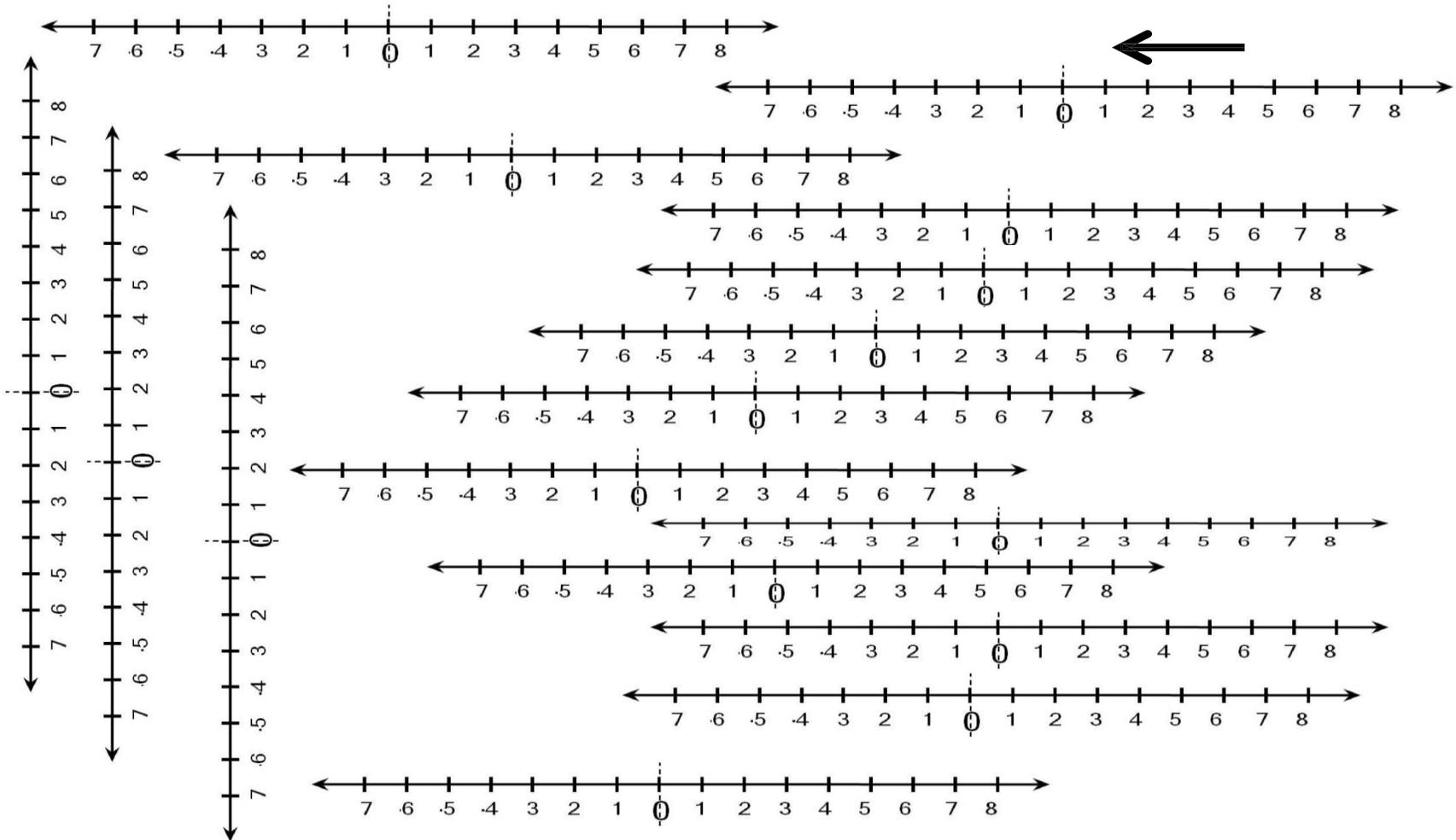
Isolate the variable shown in brackets and make it the subject of the equation.

#	1		2	
1	$D/d = \text{sqrt. } (f+p)/(f-p)$	*	$a = 3/(4t + 5) (t)$	
2	$a = 3/(4t + 5) (t)$		$v^2 = 2\pi(x - a) (x)$	
3	$v^2 = 2\pi(x - a) (x)$		$e = 3(S - Pn)/n(n - l) (P)$	
4	$e = 3(S - Pn)/n(n - l) (P)$		$D/d = \text{sqrt. } (f+p)/(f-p)$	
5	$M = 2 \text{ sqrt. } (2hr - h^2) (r)$		$r = \text{cube root } 3v/4\pi (r)$	
6	$x = dF/(D - d) (d)$		$v = 4/3 \pi r^3 (r^3)$	
7	$D/g = \text{sqrt. } (f+p)/(f-p)$		$P - mg = mv^2/r (v)$	
8	$D/d = \text{sqrt. } (f+p)/(f-p)$		$v^2 = 2\pi(x - a) (a)$	*

OD-FX1

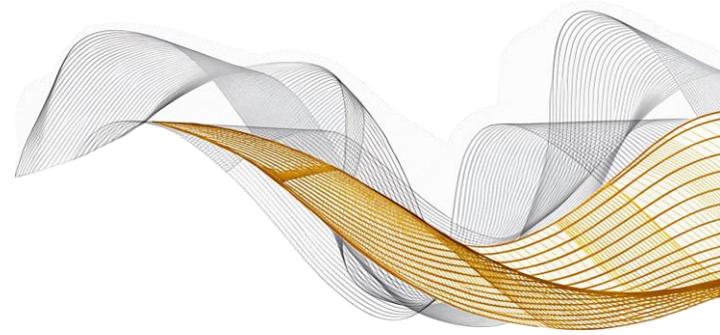


Fill in the correct + or – signs, and circle the last number line.

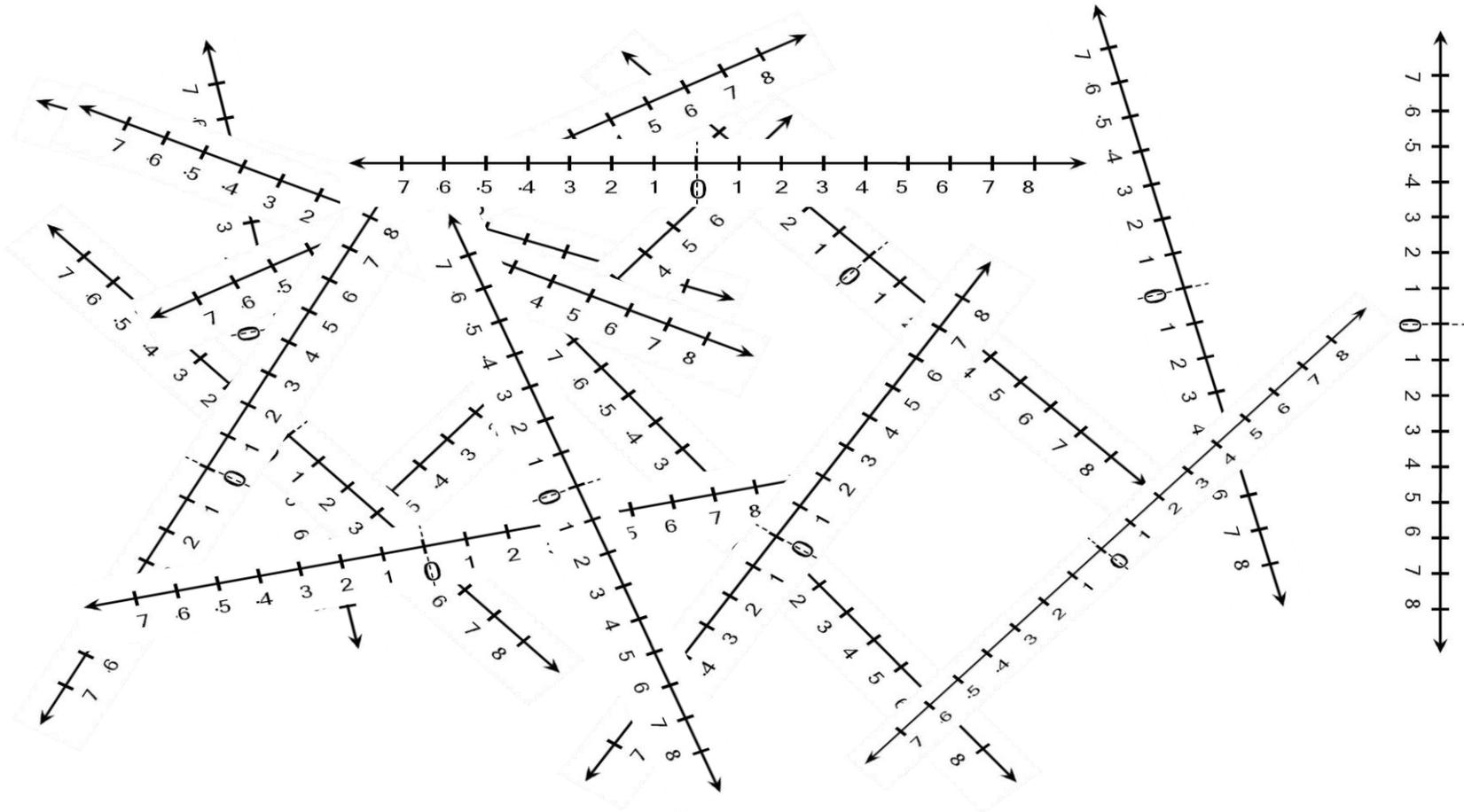




OD-FX2

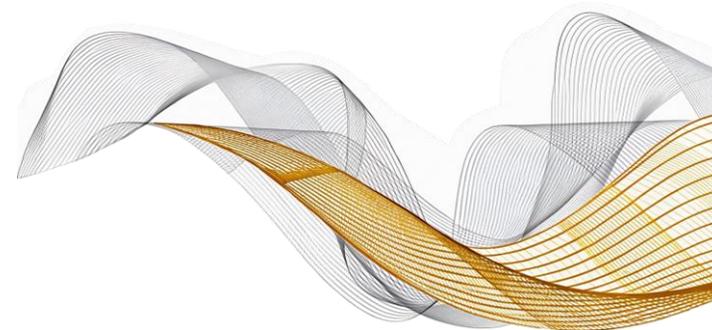


Count how many number lines there are!



Please include all the signs

ALG-E1

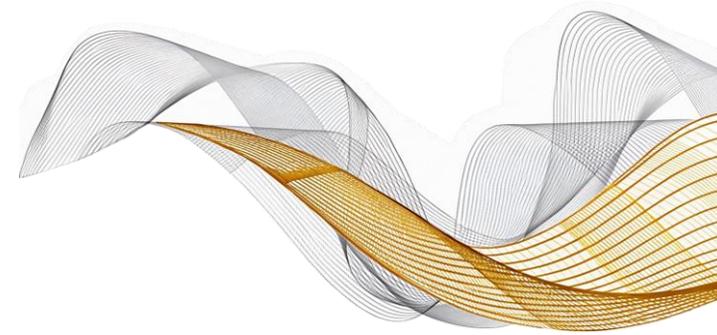


Mentally simplify the following expressions.

#	1		2		3		4	
1	$(6x \times 1)(5 \times 2x)$	*	$(3x \times 2)(4 \times x)$		$(6x \times 1)(x \times -1)$		$(3x \times 5)(x \times -3)$	
2	$(3x \times -5)(1 \times 2x)$		$(3x \times -2)(4 \times x)$		$(x \times 5)(x \times 6)$		$(4x \times 1)(x \times 3)$	
3	$(4a \times -1)(1 \times 2a)$		$(2y \times -2)(-1 \times y)$		$(3x \times x)(4x \times x)$		$(x \times 1)(-2x \times 5)$	
4	$(x \times 1)(2 \times x)$		$(x \times 2)(-5 \times x)$		$(5x \times 2)(x \times 7)$		$(x \times 9)(x \times -3)$	
5	$(3x \times -1)(2 \times 2x)$		$(5x \times -4)(2 \times 3x)$		$(x \times 4)(x \times -4)$		$(x \times 8)(x \times 1)$	
6	$(2x \times -3)(5 \times x)$		$(x \times 3)(x \times -2)$		$(x \times -5)(x \times 2x)$		$(x \times -5)(x \times 1)$	
7	$(2a \times 2)(-3 \times a)$		$(a \times b)(b \times a)$		$(x \times 3)(x \times 1)$		$(3x \times 1)(x \times -1)$	
8	$(3x \times -3)(2 \times x)$		$(3x \times 1)(3x \times 1)$		$(4x \times 2)(x \times 1)$		$(x \times -2)(x \times -2)$	
9	$(x \times 3)(x \times 4)$		$(x \times a)(x \times -a)$		$(x \times 7)(3x \times -2)$		$(x \times 6)(x \times 1)$	
10	$(x \times 3)(-7 \times x)$		$(x \times 2)(x \times 3)$		$(x \times -8)(2x \times 3)$		$(x \times 1)(2x \times 2)$	
11	$(5x \times 2)(4 \times 3x)$		$(2x \times 5)(3x \times 4)$		$(2x \times 3)(2x \times -2)$		$(4x \times 5)(x \times -2)$	
12	$(5x \times 4)(-2 \times 3x)$		$(x \times -1)(x \times 6)$		$(x \times 1)(3x \times 2)$		$(x \times 1)(3x \times 2)$	
13	$(5x \times 2)(7 \times 4x)$		$(5x \times -2)(x \times 3)$		$(x \times 5)(x \times 9)$		$(4x \times 5)(x \times -2)$	
14	$(10x \times 2)(7 \times 2x)$		$(x \times 7)(x \times -4)$		$(x \times 9)(5x \times 2)$		$(x \times 1)(x \times 4)$	
15	$(5x \times -7)(2 \times 4x)$		$(2x \times x)(3x \times x)$		$(2x \times -2)(x \times 4)$		$(2x \times 2)(x \times -5)$	
16	$(6x \times 1)(5 \times x)$		$(4x \times 2)(x \times -1)$		$(x \times 3)(-x \times 3)$		$(x \times 1)(x \times 1)$	
17	$(3x \times -1)(-5 \times 2x)$		$(x \times 3)(x \times 1)$		$(x \times 10)(x \times -1)$		$(x \times 1)(5 \times x)$	
18	$(2a \times -2)(3 \times a)$		$(2x \times 1)(x \times 2)$		$(x \times 2)(x \times -2)$		$(x \times 3)(x \times 4)$	
19	$(2a \times 2)(3 \times a)$		$(5x \times 1)(3x \times -2)$		$(x \times 6)(x \times 2)$		$(x \times -1)(x \times 1)$	
20	$(2y \times -3)(-5 \times y)$		$(x \times -3)(4x \times 2)$		$(x \times 3)(2x \times 1)$		$(x \times 1)(x \times 2)$	*

Please include all the signs

ALG-E2

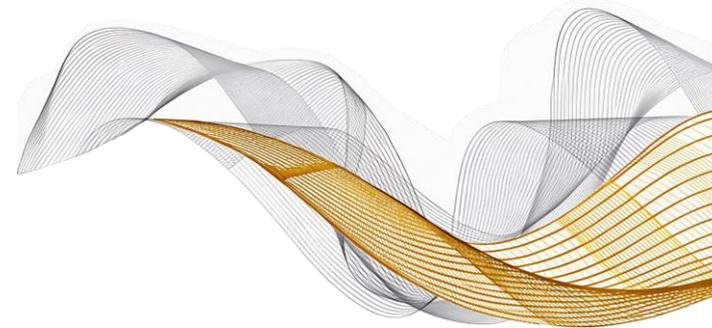


Mentally simplify the following expressions.

#	1		2		3		4	
1	$(x \times 2)(-3 \times x)$	*	$(5x \times -2)(x \times 3)$		$(-5x \times 3)(x \times 6)$		$(3x \times 2)(5 \times x)$	
2	$(-8x \times 1)(6 \times x)$		$(-2y \times 7)(4 \times y)$		$(7x \times -1)(2 \times x)$		$(4y \times -2)(-6 \times y)$	
3	$(x \times -1)(x \times 7)$		$(x \times 2)(x \times -8)$		$(x \times 3)(6 \times x)$		$(-7x \times 3)(2 \times x)$	
4	$(-3x \times 2)(5 \times x)$		$(x \times -4)(x \times 9)$		$(x \times 7)(-5 \times x)$		$(5y \times 4)(y \times -1)$	
5	$(4x \times 3)(-6 \times x)$		$(6x \times 5)(-2 \times x)$		$(-4y \times 3)(2 \times y)$		$(-2x \times 6)(3 \times x)$	
6	$(x \times -2)(x \times 5)$		$(x \times -3)(3 \times x)$		$(9x \times -2)(x \times 4)$		$(x \times 9)(-5 \times x)$	
7	$(x \times 6)(x \times -8)$		$(x \times 6)(x \times -5)$		$(-6x \times 3)(5 \times x)$		$(6x \times -3)(2 \times x)$	
8	$(-4y \times 5)(y \times 1)$		$(4x \times -4)(x \times 3)$		$(x \times 6)(x \times -4)$		$(-3y \times 4)(-4 \times y)$	
9	$(x \times 3)(-1 \times x)$		$(x \times 1)(x \times -9)$		$(-3x \times 5)(x \times 3)$		$(2x \times 8)(-1 \times x)$	
10	$(-5x \times 7)(x \times 2)$		$(-5x \times 2)(7 \times x)$		$(x \times 4)(7 \times x)$		$(-6x \times 3)(7 \times x)$	
11	$(x \times 9)(x \times -10)$		$(x \times 3)(-2 \times x)$		$(x \times 10)(-2 \times x)$		$(x \times -10)(x \times 2)$	
12	$(-2x \times 3)(6 \times x)$		$(x \times -7)(4 \times x)$		$(3y \times 4)(-1 \times y)$		$(x \times -1)(4 \times x)$	
13	$(x \times -6)(x \times 1)$		$(-3y \times 6)(y \times 2)$		$(-7x \times 2)(x \times 5)$		$(-4x \times 7)(x \times 3)$	
14	$(x \times 8)(-3 \times x)$		$(x \times 7)(-1 \times x)$		$(x \times -6)(3 \times x)$		$(3x \times -9)(2 \times x)$	
15	$(x \times -7)(x \times 2)$		$(x \times -2)(x \times 10)$		$(x \times 8)(-9 \times x)$		$(x \times 5)(-6 \times x)$	
16	$(-3x \times 6)(x \times -5)$		$(-6x \times 5)(x \times 4)$		$(x \times 5)(x \times -2)$		$(-3x \times 6)(x \times 4)$	
17	$(x \times -9)(2 \times x)$		$(2x \times 2)(x \times -3)$		$(-4x \times 3)(6 \times x)$		$(5y \times -2)(3 \times y)$	
18	$(5x \times -1)(3 \times x)$		$(x \times -5)(x \times 6)$		$(x \times 9)(x \times -7)$		$(2x \times 7)(-4 \times x)$	
19	$(x \times 4)(x \times -2)$		$(x \times 4)(x \times -6)$		$(2x \times 6)(-5 \times x)$		$(-8x \times 1)(5 \times x)$	
20	$(-6y \times 2)(3 \times y)$		$(7x \times -3)(x \times 2)$		$(x \times -1)(x \times 4)$		$(3x \times 4)(-2 \times x)$	*

Please include all the signs

ALG-E4

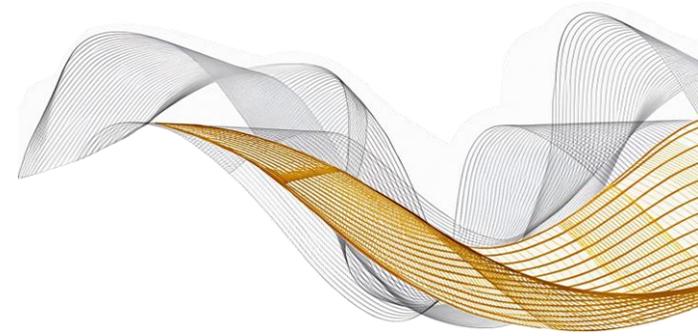


Simplify the following.

#	1		2	
1	$(x - y)^2$	*	$(2x + 3)/5 - (x + 2)/3$	
2	$(x + 3)(x - 2)$		$3m - 2(m + 1)$	
3	$5/y - 7/y + 1/2$		$3/y - 2/y - 2$	
4	$2y + 3(y - 1)$		$2(x - 1) = 5/2$	
5	$(m + 2)/2 - 3/3$		$(a + b)^2 - 2ab$	
6	$x/4 + 16 = 2x$		$2(3x + 1) - (x + 2)$	
7	$x - 5 \leq 7 - 2x$		$x - 3 \geq 2x - 8$	
8	$-2x/3 \geq 4$		$(a + b)^2$	
9	$6x - 8(x + 3) = 10$		$2x/3 + 4/y = 1$	
10	$2/x - 1 - 3/x + 1$		$(1 + 3x)^2$	
11	$(a - b)^2 + 2ab$		$(6x + 1)^2$	*

Please include all the signs

ALG-P1

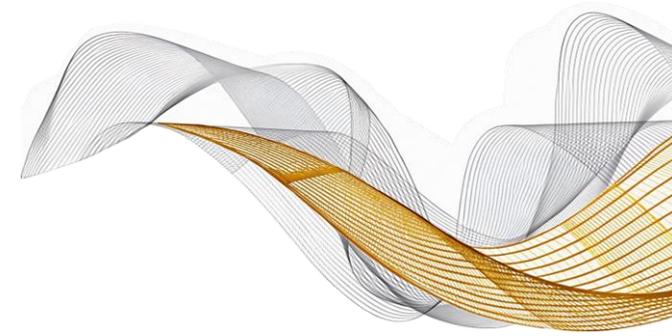


Factorize the following.

#	1		2	
1	$6x^2 - 13x - 5$	*	$x^2 + 7x + 12$	
2	$8a^2 - 2a - 1$		$x^2 - 4x - 21$	
3	$x^2 + 3x + 2$		$12x^2 + 28x + 15$	
4	$6x^2 + x - 2$		$15x^2 + 14x - 8$	
5	$x^2 + 3x + 2$		$20x^2 - 27x - 14$	
6	$2x^2 - x - 15$		$6x^2 - 13x - 5$	
7	$2a^2 + a - 6$		$2a^2 + a - 6$	
8	$3x^2 - 7x - 6$		$2y^2 - 11y + 15$	
9	$2x^2 - 9x + 4 = 15$		$3x^2 + 2x - 8$	
10	$x^2 - 3x + 2 \geq 6$		$2y^2 - 5y + 2$	
11	$2x^2 - x - 6 = -3$		$12x^2 + 15x + 4x + 5$	*

Please include all the signs

ALG-P2

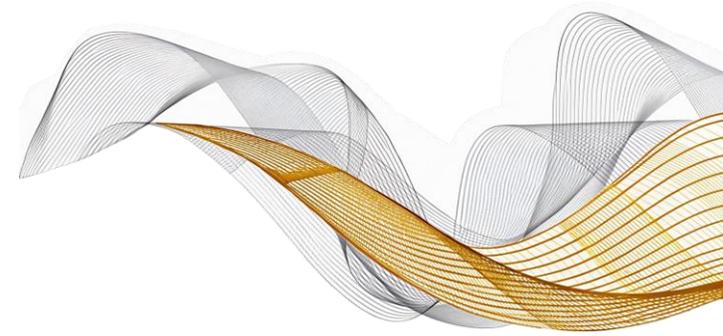


Factorize the following.

#	1		2	
1	$2 - 5x + 6x - 15x^2$	*	$x^2 + 5x + 6$	
2	$6 + 2x - 3x - x^2$		$2x^2 + 3x - 5 < 7$	
3	$3 - 3x + x - x^2$		$x^2 - 7x + 10 = 3$	
4	$x^2 + 3x = 10$		$x^2 - 6x + 8$	
5	$x^2 - 2x = 35$		$x^2 - 9x + 14 = -2$	
6	$2x^2 - x - 6 = 0$		$x^2 + x - 6$	
7	$x^2 - 5x + 6 < 0$		$x^2 + 6x + 5 = 0$	
8	$2x^2 + 5x + 3$		$x^2 + 9x + 20$	
9	$3x^2 + 2x - 1 = 5$		$x^2 - x - 12$	
10	$x^2 - 6x + 8$		$3x^2 - 14x + 8$	
11	$2x^2 - x - 6 = 0$		$x^2 - 10x + 24$	*

Please include all the signs

ALG-P3

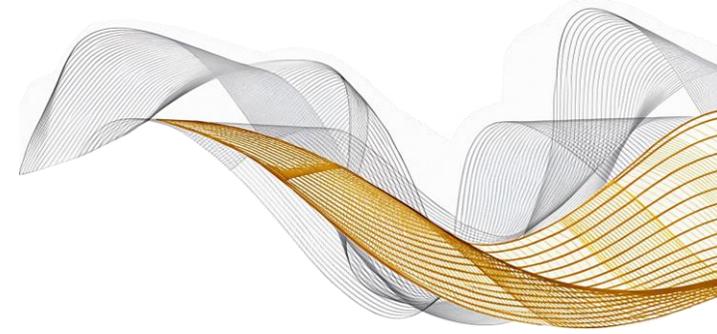


Factorize the following.

#	1		2	
1	$3a^2 - 9$	*	$2a + a$	
2	$4y^2 + y$		$7mp^2 + 14m^2p$	
3	$P^3 - p$		$5a^2b + ab^2$	
4	$3xy - x$		$6x^2 - 3x$	
5	$12x^2 - 8x$		$y^2 - 3y$	
6	$x - ax$		$-8x - 6x^2$	
7	$y - ay$		$4a + 2sa$	
8	$3x^2 - 21x$		$r - 2r$	
9	$2x^2 + 3y$		$x - x^2$	
10	$3 - 12b^2$		$15x^2 - 6x$	
11	$8h^2 - 4h$		$3 - 3x$	
12	$3x - x^2$		$5x - 20x^2$	
13	$6x^2 - x$		$6a^2 - 3a$	
14	$Pm - 2P$		$12 - 8y$	
15	$15g^2 - 30g$		$9m^2 - 3m$	
16	$t - 5t^2$		$2n - 10n^2$	
17	$16x - 4x^2$		$18p^2 - 6$	
18	$10 - 5t$		$14 - 7k$	
19	$2h^2 - 4h$		$4z - 2z^2$	
20	$9 - 27x$		$21 - 7d$	*

Please include all the signs

ALG-P4

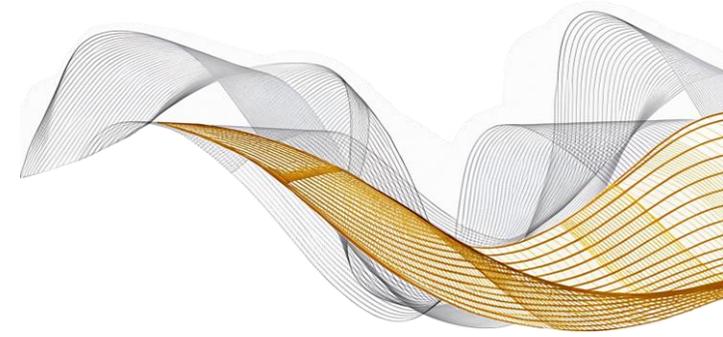


Factorize the following.

#	1		2	
1	$p^3 - p$	*	$x^2 + 11x + 18$	
2	$x^2 - 2x - 35$		$10a^2 + 5a$	
3	$4y^2 + y$		$x^2 - x - 6$	
4	$3x^2 + x - 10$		$5x^2 - 2x - 3$	
5	$x^2 - 4x - 21$		$7x^2 + 14x$	
6	$p^3 + 2p^2$		$2x^2 - 7x + 3 = 5$	
7	$x^2 + 6x + 5 > 0$		$x^3 - 4x$	
8	$x^2 + x - 20$		$4x^2 + 7x + 3$	
9	$6x^2 - x - 12 = 0$		$6x^2 - 9x$	
10	$y^2 - y^3$		$x^2 + 5x + 6 < 10$	
11	$3x^2 + 10x - 8$		$2r^3 + 6r^2$	*

You are doing well!

GEN-F1



Work out the following questions.

- 1) If the custom duty on imported vehicles is 30% of the imported price. If the total amount paid, including the customs duty, for a bus is \$15,600, what is the import price of the bus before the duty is added?

- 2) A metal is made from copper, zinc and lead in the ratio of 13:6:1. The mass of zinc is 90kg. Calculate:
 - (i) The mass of the lead.
 - (ii) The mass of copper.
 - (iii) The mass of the metal.

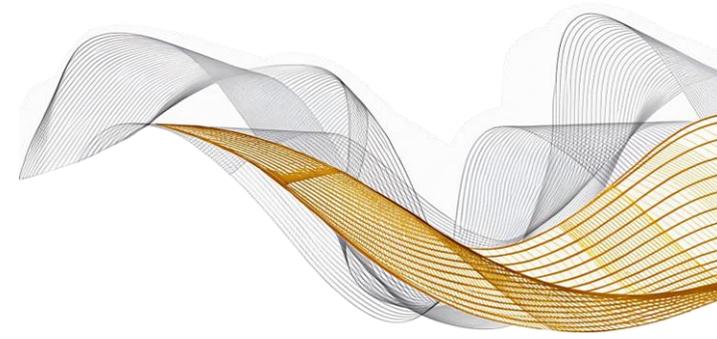
- 3) Mrs. White purchased a new computer for BDS \$6,240.00. Given that the exchange rate at the time was BDS \$1.92 = USD \$1.00, calculate the amount she paid for the computer in US dollars. [BDS \$ = Barbados dollar, USD \$ = United States dollar]

- 4) The regular price of a shirt is \$40.00. What amount does the customer pay if a 20% discount is applied? Additionally, if the salesman makes a 60% profit when selling the shirt at the discounted price, what is the cost of the shirt to the salesman?

- 5) A graph is drawn with a scale of 1 cm = 1 unit on the x-axis and 2cm = 5 units on the y-axis. What is the reading on the graph if the line hits the x-axis at 5 plus 2 small squares and half?

You are doing well!

GEN-F2

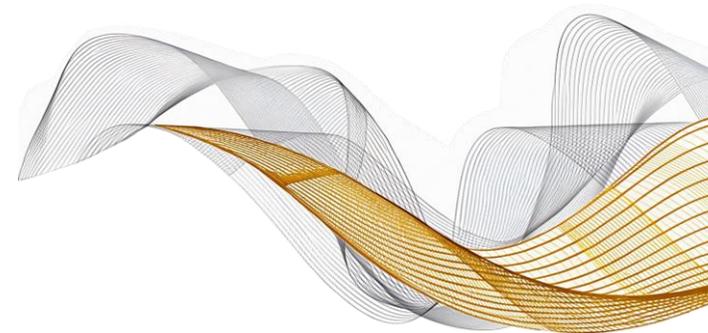


Work out the following questions.

- 1) A piece of wood is divided into three pieces in the ratio of 3:4:2. The length of the longest piece is 72cm. Calculate the length of the piece of wood.
- 2) A sum of money is shared between Aaron and Betty in the ratio of 2:5. Aaron received \$60. How much money was shared altogether?
- 3) A shopkeeper buys a stove from a manufacturer and sells it for \$150, making a 20% profit.
 - a) How much did the shopkeeper pay the manufacturer for the stove?
 - b) If the shopkeeper offers a 10% discount for cash payment, how much will the customer pay for the stove?
- 4) The price of a shirt is \$40.
 - a) What is the discounted price if a 20% discount is applied?
 - b) If the salesman makes a profit of 60%, when selling the shirt at the discounted price, what was the cost of the shirt to the salesman?
- 5) The price of a refrigerator, including a sales tax of 12%, is \$1400, what is the price of the refrigerator before tax?
- 6) The price of a television is \$4,480. What would the cost be after applying an 18% discount?
- 7) If the total cost of a shirt, including an 8% sales tax, is \$32.40, what was the price of the shirt before tax?
- 8) A tank has a capacity of 120 liters and a height of 40 cm. If it currently contains 45 liters of liquid, what height would the liquid reach in the tank?

You are doing well!

GEN-F3

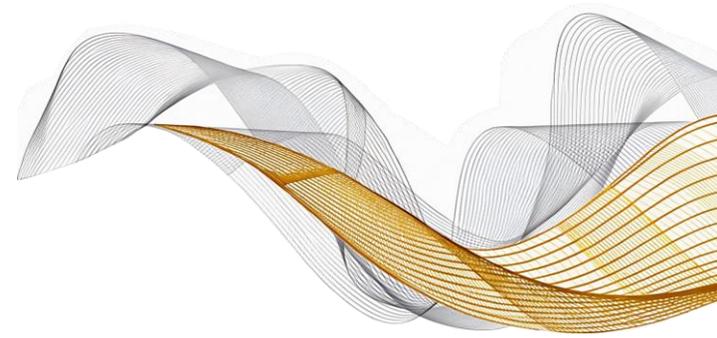


Work out the following questions.

- 1) A graph is drawn with a scale of 2 cm = 1 unit on the x -axis and 1 cm = 1 unit on the y -axis. What is the reading on the graph if the line hits the x -axis at 2 plus 3 small squares?
- 2) A graph is drawn with a scale of 2 cm = 1 unit on the x -axis and 1 cm = 1 unit on the y -axis. What is the coordinate of the turning point on the graph if the x -axis reading is -6 (plus a quarter of a small square), and the y -axis reading is 2 small squares and half a small square from zero?
- 3) A graph is drawn with a scale of 2 cm = 1 unit on the x -axis and 1 cm = 1 unit on the y -axis. What is the coordinate of the turning point on the graph if the x -axis reading is 1 (plus 5 small squares), and the y -axis reading is 1 small square from zero?
- 4) A graph is drawn with a scale of 2 cm = 1 unit on the x -axis and 1 cm = 1 unit on the y -axis. What is the coordinate of the turning point on the graph if the x -axis reading is -4 (plus 2 small squares), and the y -axis reading is 3 and a half small square from zero?
- 5) A graph is drawn with a scale of 1 cm = 1 unit on the x -axis and 2 cm = 5 units on the y -axis. What is the reading on the graph if the line hits the x -axis at 5 plus 2 and 1/2 small squares?
- 6) A graph is drawn with a scale of 2 cm = 1 unit on the x -axis and 1 cm = 1 unit on the y -axis. What is the reading on the graph if the line hits the x -axis at 2 plus 7 small squares?
- 7) A graph is drawn with a scale of 2 cm = 1 unit on the x -axis and 1 cm = 1 unit on the y -axis. What is the reading on the graph if the line hits the x -axis at 1 plus 5 and 3/4 small squares?

You are doing well!

GEN-4

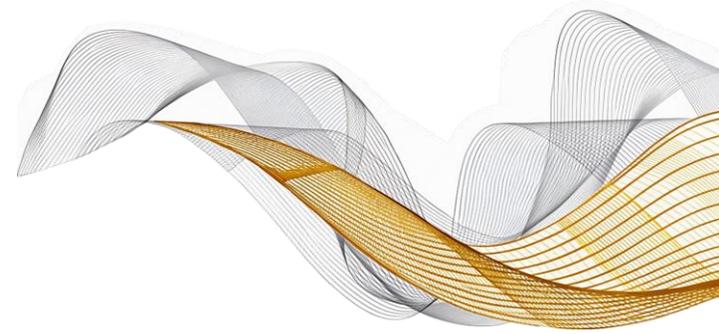


Work out the following questions.

- 1) A graph has a scale of $2\text{ cm} = 1\text{ unit}$ on the x -axis. How many small squares on the graph are required to represent a total of 5 units?
- 2) A graph has a scale of $1\text{ cm} = 1\text{ unit}$ on the y -axis. How many small squares on the graph are required to represent a total of 15 units?
- 3) A graph has a scale of $1\text{ cm} = 1\text{ unit}$ on the y -axis. How many small squares on the graph are required to represent a total of 18 units?
- 4) A graph has a scale of $2\text{ cm} = 1\text{ unit}$ on the x -axis. How many small squares on the graph are required to represent a total of 6 units?
- 5) A graph has a scale of $1\text{ cm} = 1\text{ unit}$ on the y -axis. How many small squares on the graph are required to represent a total of 17 units?
- 6) A graph has a scale of $2\text{ cm} = 5\text{ units}$ on the y -axis. How many small squares on the graph are required to represent a total of 40 units?
- 7) A graph has a scale of $1\text{ cm} = 1\text{ unit}$ on the x -axis. How many small squares on the graph are required to represent a total of 8 units?
- 8) A graph has a scale of $1\text{ cm} = 1\text{ unit}$ on the x -axis. How many small squares on the graph are required to represent a total of 13 units?
- 9) A graph has a scale of $4\text{ cm} = 1\text{ unit}$ on the x -axis. How many small squares on the graph are required to represent a total of 3.5 units?
- 10) A graph has a scale of $2\text{ cm} = 0.5\text{ unit}$ on the $f(x)$ -axis. How many small squares on the graph are required to represent a total of 4 units?
- 11) A graph has a scale of $5\text{ cm} = 1\text{ unit}$ on the y -axis. How many small squares on the graph are required to represent a total of 1.2 units?
- 12) A graph has a scale of $5\text{ cm} = 1\text{ unit}$ on the $f(x)$ -axis. How many small squares on the graph are required to represent a total of 2 units?
- 13) A graph has a scale of $1\text{ cm} = 0.2\text{ units}$ on the y -axis. How many small squares on the graph are required to represent a total of 3 units?

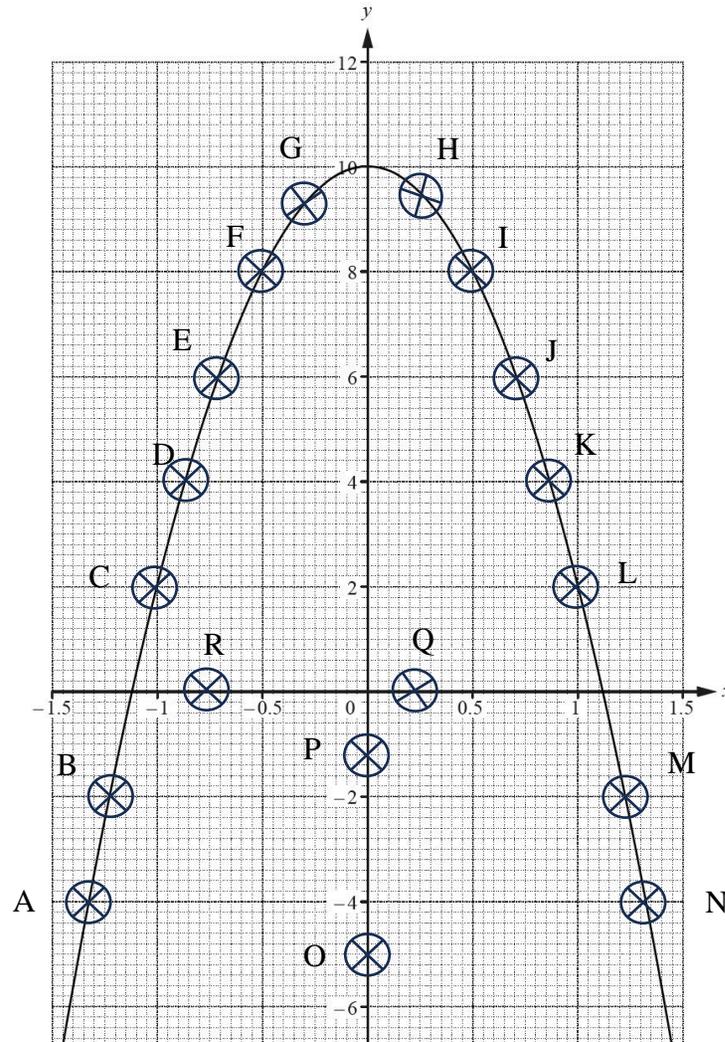
We are proud of you!

GRF-S1



Write the coordinates of each point besides the graph.

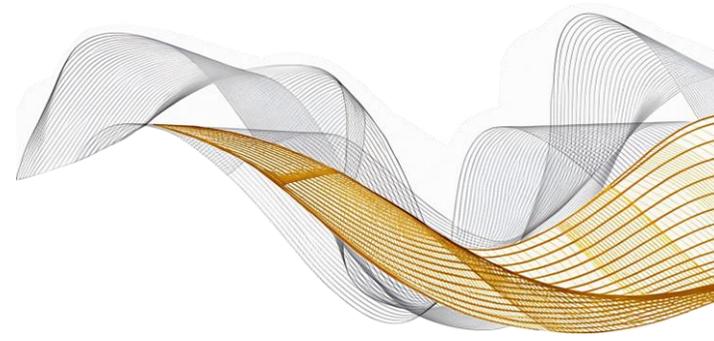
- A: _____
- B: _____
- C: _____
- D: _____
- E: _____
- F: _____
- G: _____
- H: _____
- I: _____
- J: _____
- K: _____
- L: _____
- M: _____



- N: _____
- O: _____
- P: _____
- Q: _____
- R: _____

We are proud of you!

GRF-S2



Write the coordinates of each point besides the graph.

A: _____

B: _____

C: _____

D: _____

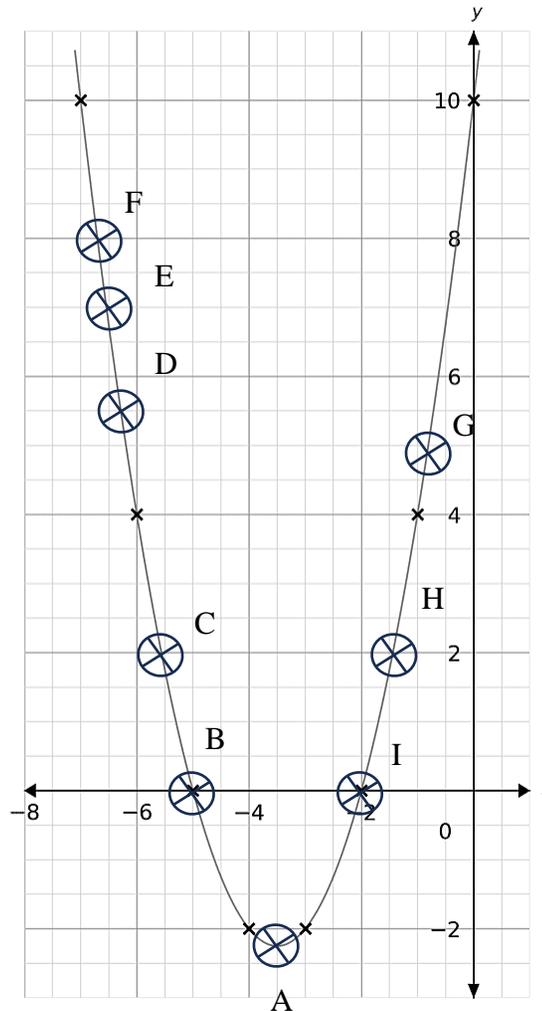
E: _____

F: _____

G: _____

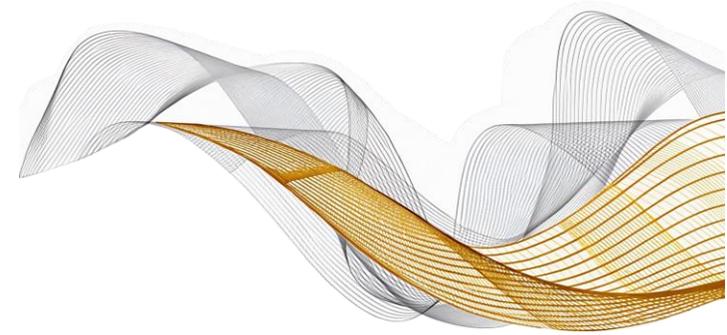
H: _____

I: _____



We are proud of you!

GRF-S3-1



Look at the tables below and answer these questions using your graph paper.

1. How many small squares would be needed on the **y-axis**?
2. How many small squares would be needed on the **x-axis**?
3. Would the graph extend more on the **positive or negative side of the y-axis**?
4. Would the graph extend more on the **positive or negative side of the x-axis**?
5. Where would the **two graphs intersect** when you draw them?

1)

x	-2	-1	0	1	2	3	4	5
y	10	4	0	-2	-2	0	4	10

2)

x	-2	-1	0	1	2	3
y	4	-3	-6	-5	0	9

3)

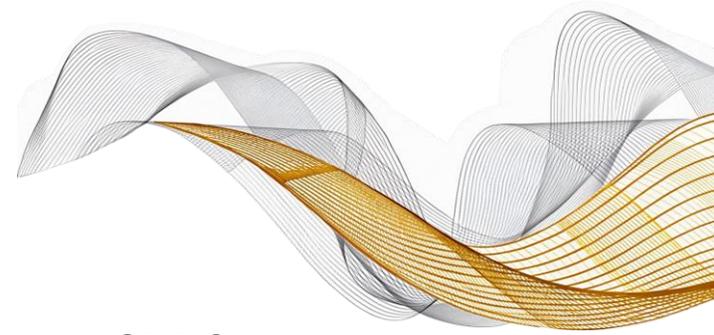
x	-1	0	1	2	3	4	5
$f(x)$	-6	-2	0	0	-2	-6	-12

4)

x	-2	-1	0	1	2
$f(x)$	12	1	-4	-3	4

We are proud of you!

GRF-S3-2



Refer to the tables below and use your graph paper to answer the questions on page GRF-S3-2.

1)

<i>x</i>	-2	-1	0	2	4	6
<i>y</i>	30	15	4	-6	0	22

2)

<i>x</i>	0	1	2	3	4	5
<i>y</i>	0	0.5	2	4.5	8	12.5

3)

<i>x</i>	-3	-2	-1	0	1	2	3	4
<i>y</i>	0.125	0.25	0.5	1	2	4	8	16

4)

<i>x</i>	-2	-1	0	1	2	3
<i>y</i>	-4	-0.5	0	0.5	4	13.5

5)

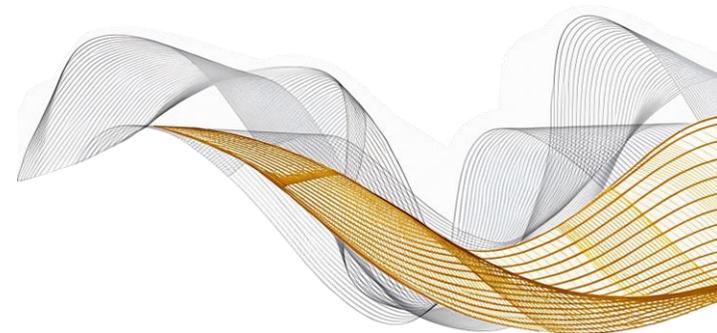
<i>x</i>	0°	30°	60°	90°	120°	150°	180°
<i>y</i>	1	1.1	1.5	2	2.5	2.87	3

6)

<i>Year</i>	1990	1991	1992	1993	1994	1995
<i>Cost</i>	10,000	30,000	36,000	30,000	34,000	50,000

Distinction is within your reach!

TRI-E



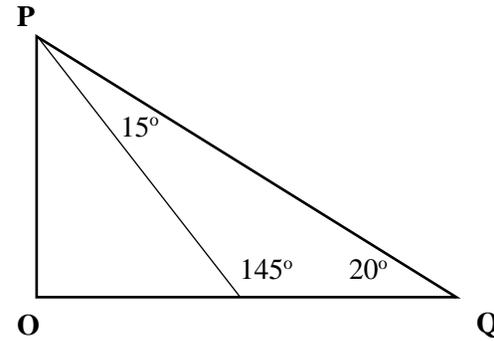
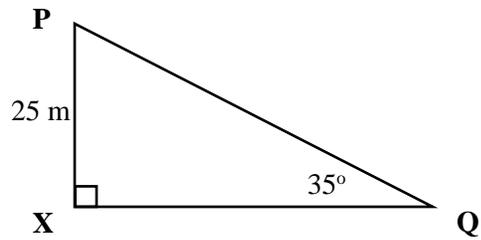
All the questions in the **TRI-E** worksheets are based on these formulas.

A	B	C	D
$a^2 + b^2 = c^2$	$\sin \theta = O/H$	$\cos \theta = A/H$	$\tan \theta = O/A$

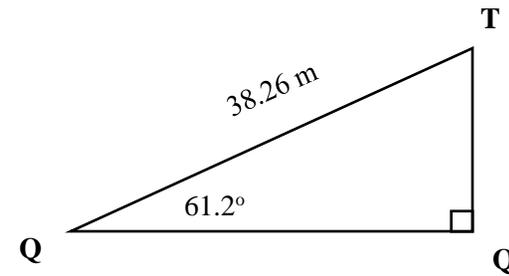
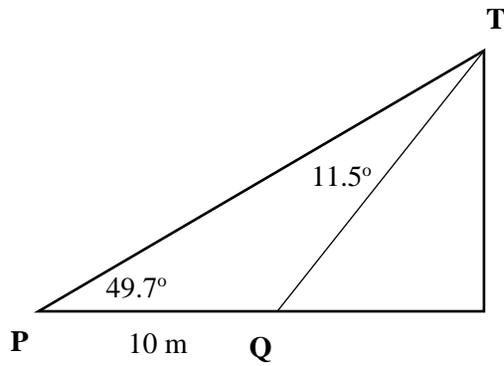
E	F	G	H
$a/\sin A = b/\sin B = c/\sin C$	$\sin A/a = \sin B/b = \sin C/c$	$c^2 = a^2 + b^2 - 2ab \cos C$	$\cos C = (a^2 + b^2 - c^2)/2ab$

Each triangle formula only applies to a **few** specific situations, show **all** of these different cases. Once students learn when to use each one, that's really all they need to succeed.

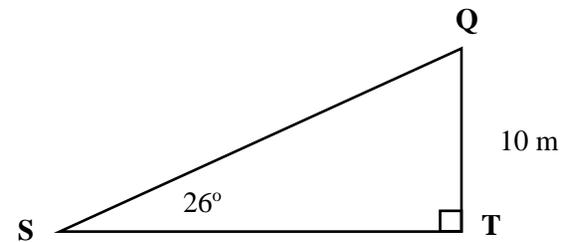
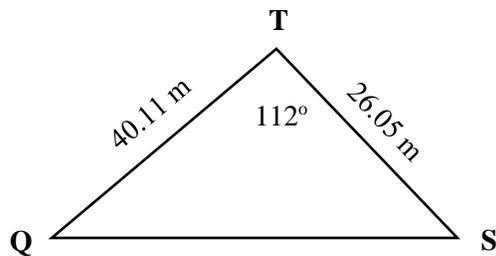
1) For each triangle, which formulas would you use to find the length of the line PQ, and how would you apply it?



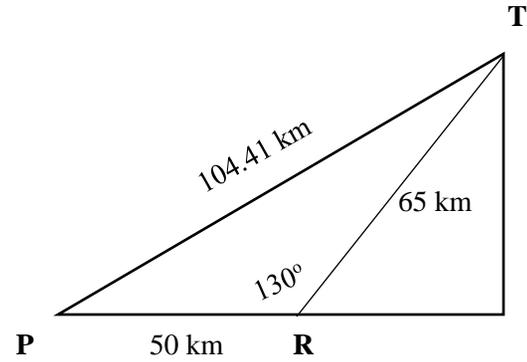
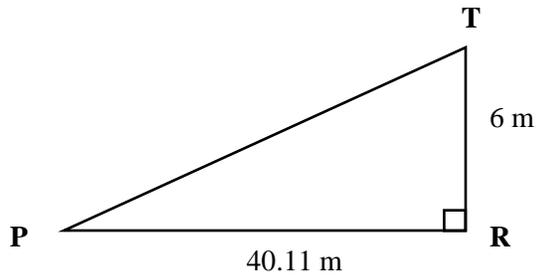
2) For each triangle, which formulas would you use to find the length of the line TQ, and how would you apply it?



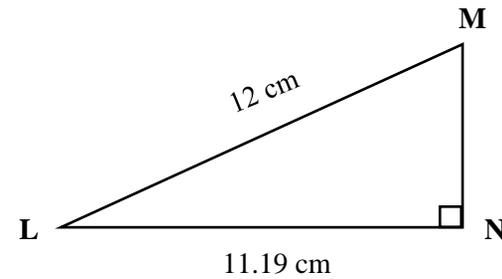
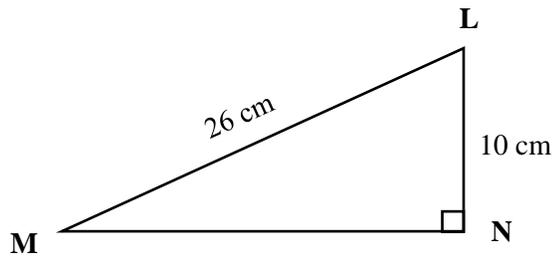
3) For each triangle, which formulas would you use to find the length of the line QS, and how would you apply it?



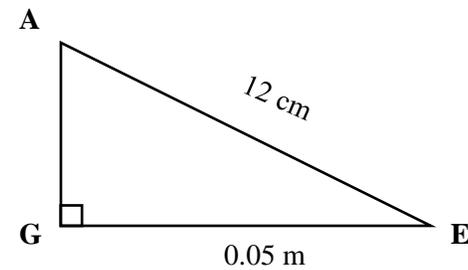
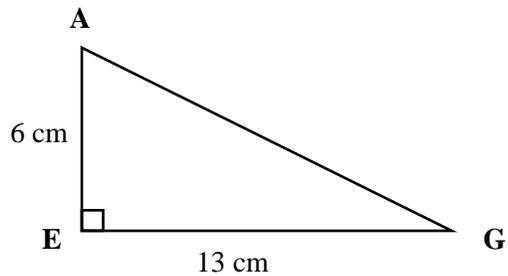
4) For each triangle, which formulas would you use to find the angle TP, and how would you apply it?



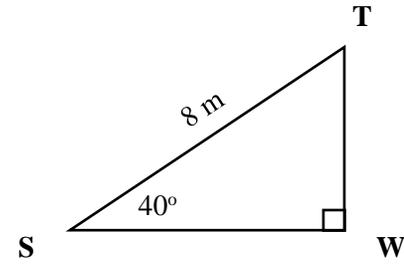
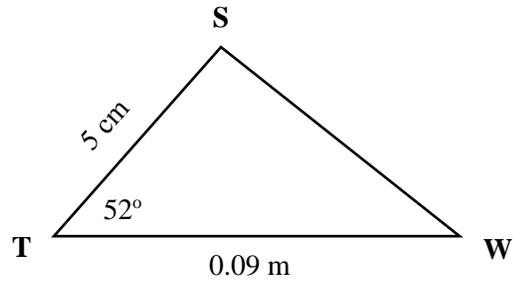
5) For each triangle, which formulas would you use to find the length of the line MN, and how would you apply it?



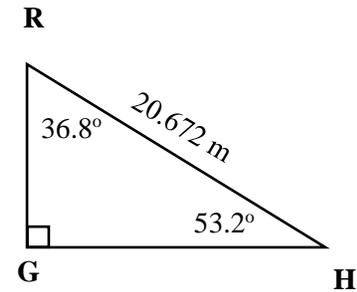
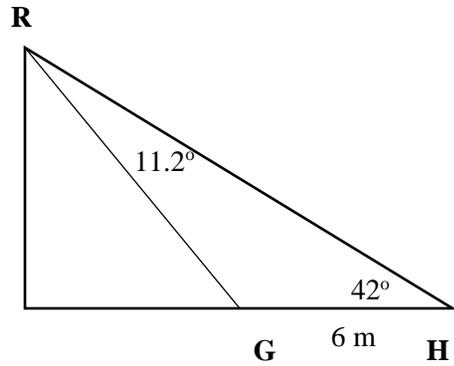
6) For each triangle, which formulas would you use to find the length of the line AG, and how would you apply it?



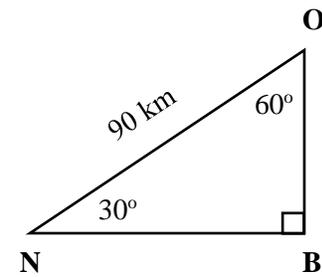
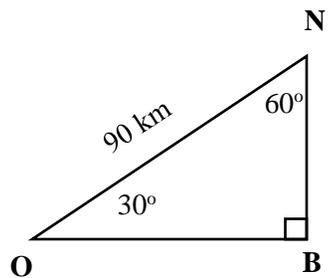
7) For each triangle, which formulas would you use to find the length of the line SW, and how would you apply it?



8) For each triangle, which formulas would you use to find the length of the line RG, and how would you apply it?

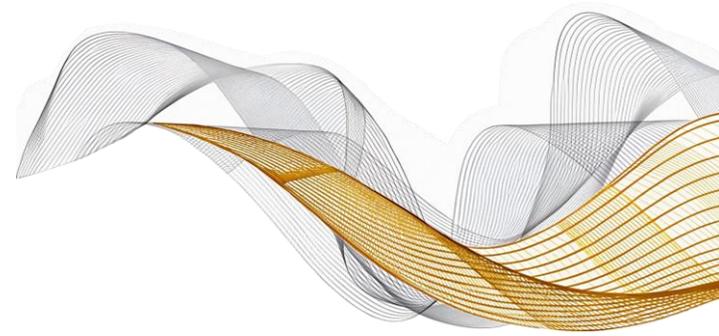


9) For each triangle, which formulas would you use to find the length of the line OB, and how would you apply it?



Keep trying—it's working!

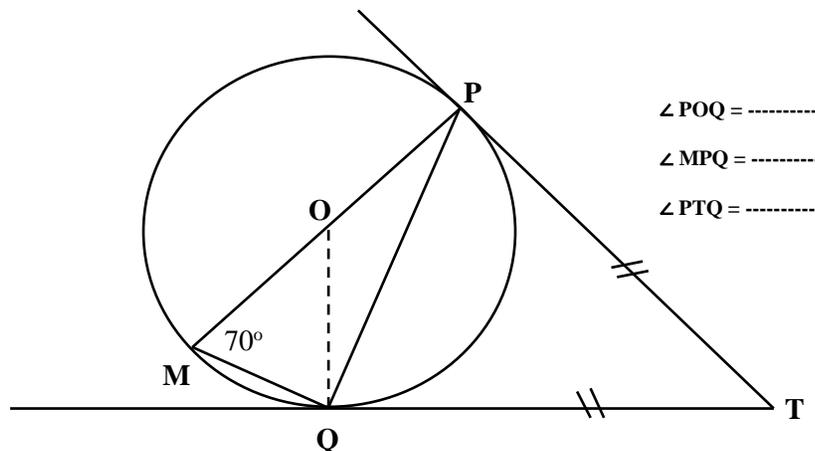
CIR-F



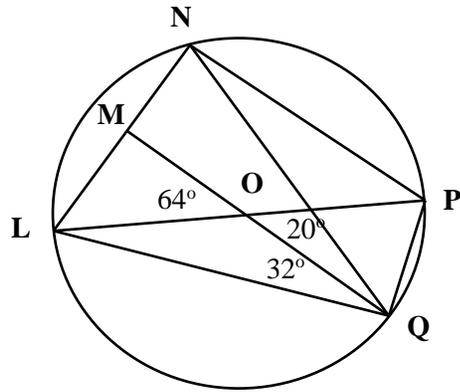
For each circle question, identify the **circle theorem** below that helps you work out its size.

- A) The angle at the centre of a circle is twice any angle at the circumference standing on the same arc.
- B) Angles at the circumference standing on the same arc are equal.
- C) The angle in a semi-circle is a right angle.
- D) The opposite angles of a cyclic quadrilateral are supplementary.
- E) The exterior angle of a cyclic quadrilateral is equal to the interior opposite angle.
- F) The tangent always forms a right angle with the circle's radius.
- G) Tangents segments that share an endpoint not on the circle are equal.
- H) The angle between the tangent and the chord is equal to the angle in the alternate segment.
- I) The angle between the tangent and the chord is equal to $\frac{1}{2}$ the angle at the centre subtended by the chord.

1)



8)



$\angle OLQ = \dots\dots\dots$

$\angle NQP = \dots\dots\dots$

$\angle NLP = \dots\dots\dots$

$\angle NPL = \dots\dots\dots$

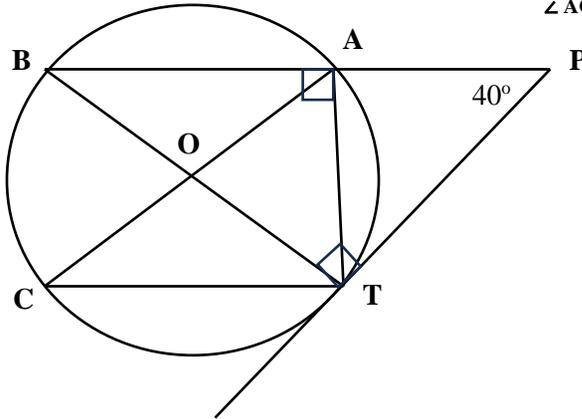
$\angle BTP = \dots\dots\dots$

$\angle BAT = \dots\dots\dots$

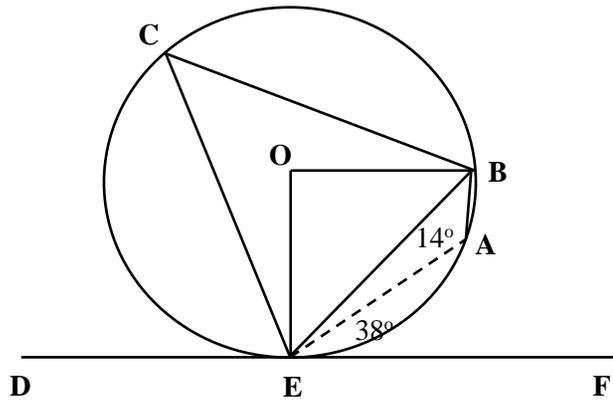
$\angle ABT = \dots\dots\dots$

$\angle ACT = \dots\dots\dots$

10)



12)



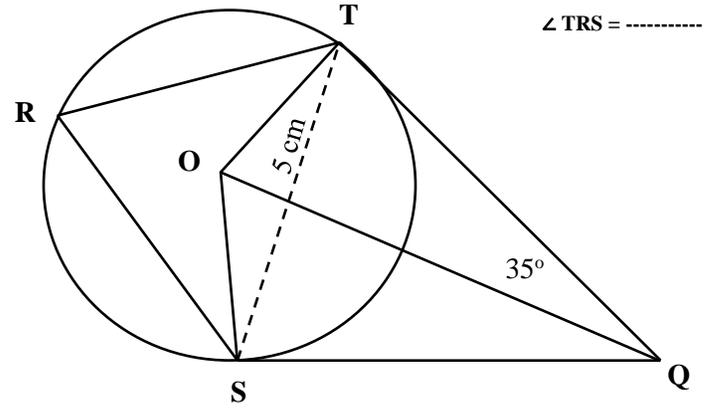
$\angle BEO = \dots\dots\dots$

$\angle BCE = \dots\dots\dots$

$\angle BAE = \dots\dots\dots$

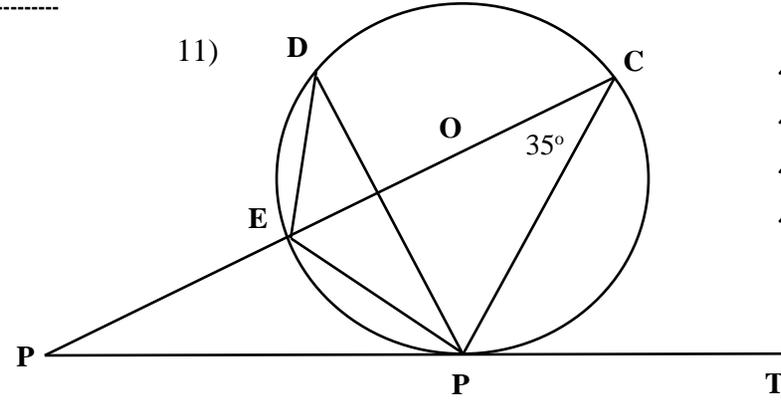
$\angle BOE = \dots\dots\dots$

9)



$\angle TRS = \dots\dots\dots$

11)



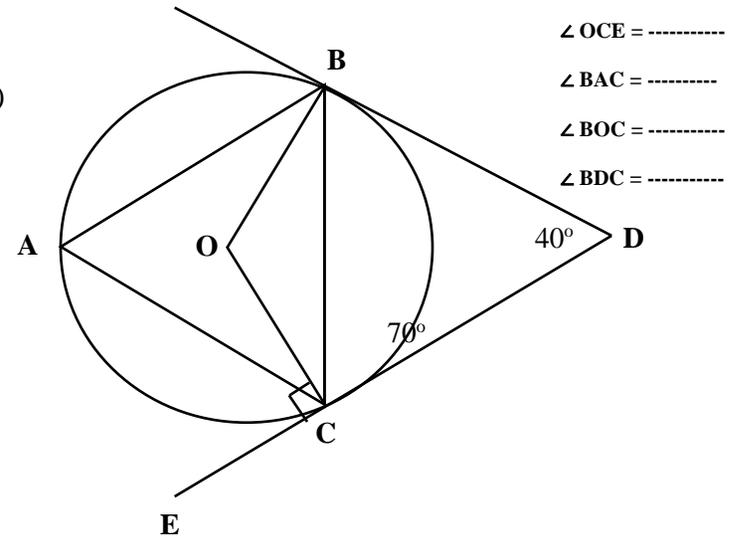
$\angle EDB = \dots\dots\dots$

$\angle BEC = \dots\dots\dots$

$\angle CBT = \dots\dots\dots$

$\angle BAC = \dots\dots\dots$

13)



$\angle OCE = \dots\dots\dots$

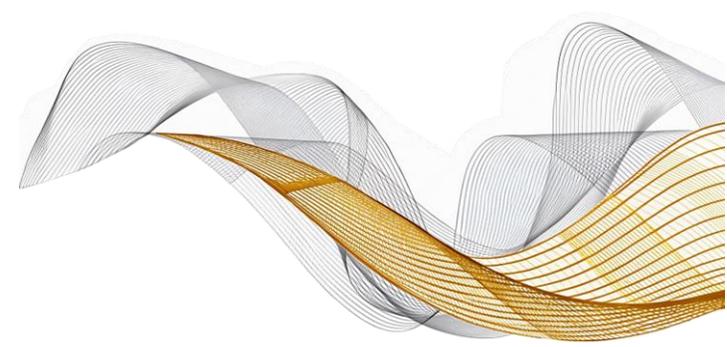
$\angle BAC = \dots\dots\dots$

$\angle BOC = \dots\dots\dots$

$\angle BDC = \dots\dots\dots$

Finish Like a Pro!

CON-D



Please construct the following using only a ruler, pencil, and compass.

#	1	2
1	Bisect (divide into 2 equal parts) a line AB	A 90° angle \angle FGH
2	Bisect (divide into 2 equal parts) an angle \angle ABC	A 45° angle \angle BCD
3	A 60° angle \angle PQR	A $22\frac{1}{2}$ angle \angle EFG
4	A 30° angle \angle MNO	A perpendicular line (90° angle) from a point NOT on the line
5	A 15° angle \angle XYZ	A perpendicular line from a point ON the line
6	A 120° angle \angle PQR	