


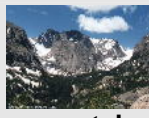


# Science 7 - Numerical Response Questions - Structures and Forces

Sample ...

1. Classify each structure

1  <b>feather</b>	2  <b>bicycle</b>
3  <b>dam</b>	4  <b>mountain</b>

4	1	3	2
Natural Mass	Frame	Manufactured Mass	Frame

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

2. Match the description with the type of **material** it represents.

- 1 made from more than one type of material
- 2 putting layers of materials together to make them stronger
- 3 interlocking to make the material stronger
- 4 melting and dissolving substances together

_____	_____	_____	_____
yarn	drywall	aluminum foil	reinforced concrete

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

3. Match the type of **rigid joint** with the example that illustrates it.

- 1 fastener
- 2 tie
- 3 interlocking shape
- 4 adhesive

_____	rivets
_____	clothing hem
_____	shoe lace
_____	epoxy resin

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

4. **Gravitational Force** on the Earth is equal to approx. 10 Newtons for each kilogram of mass. How much force does 125 grams have?

**Show how you figured it out!**

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

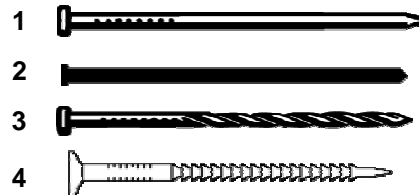
5. **Internal Forces** – are forces, which can be exerted on a structure from within. Match the type of internal force with its description.

- 1 tension
- 2 compression
- 3 shear
- 4 torsion

_____	squeezing together
_____	twisting and turning
_____	tearing or ripping
_____	pulling apart

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

6. Different nails are used for different purposes. Put the following nail types in order of their **fastening ability**. Most friction to least friction



\_\_\_\_\_ most friction -----> least friction

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