

# Scuba Physics

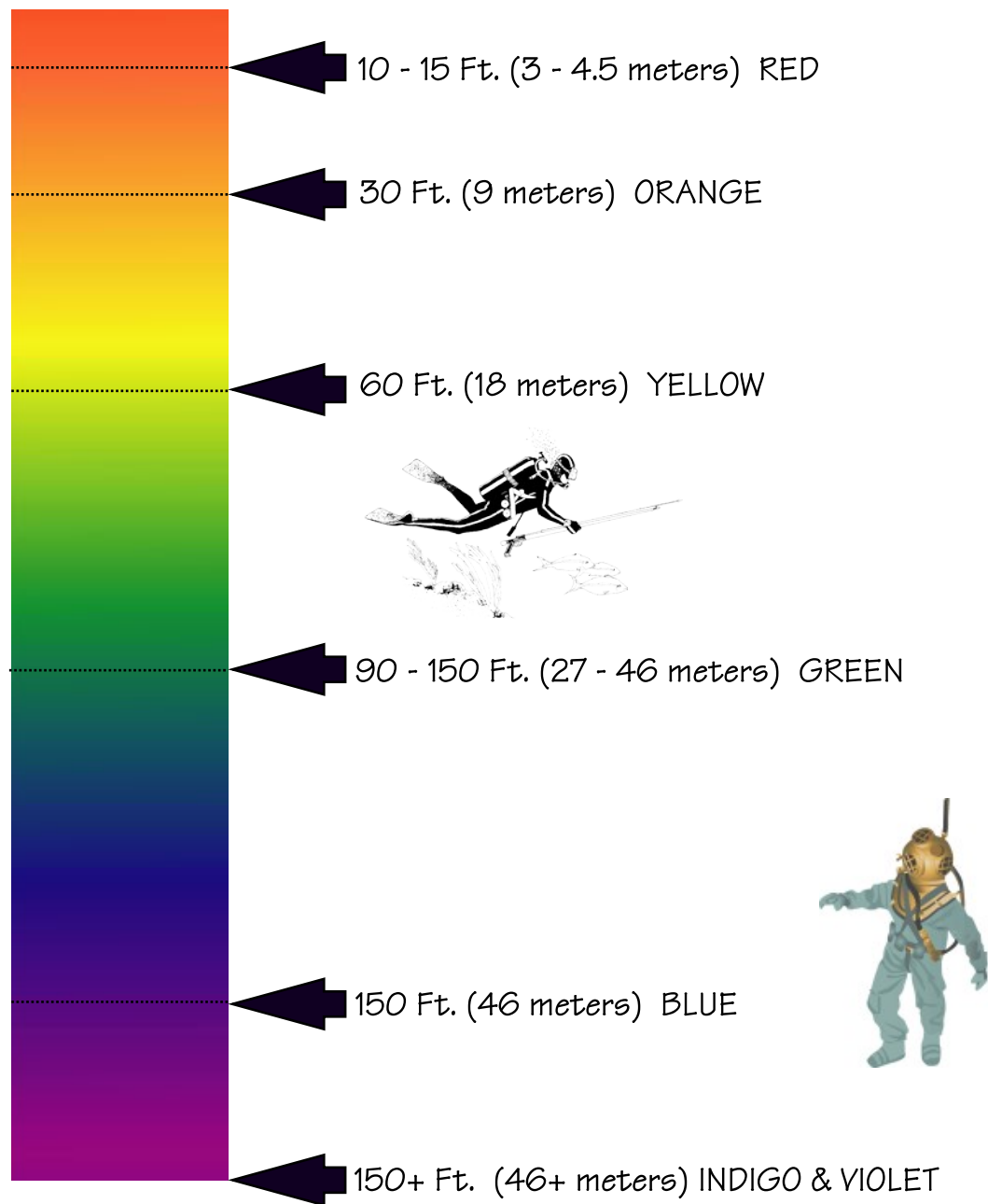
Boyle's Law

Depth	Pressure	Water Balloon		Air Balloon		Air Usage Example	Partial Pressure	
		Vol. = 1 100%	Vol. = 1 100%	1 cf. 100%	1 cf. 100%		O <sub>2</sub> @ 20%	N <sub>2</sub> @80%
Sea Level 0' sw 1 Atm.	14.7 psia.					1 2 hrs.	2.94 psi.	11.76 psi.
33' sw 34' fw 2 Atm. (red, orange)	29.4 psia.			 50% change from 0'	 50% change from 0'	2x 1 hr.	5.88 psi.	23.52 psi.
66' sw 68' fw 3 Atm. (red, orange, yellow)	44.1 psia.			 17% change from 33'	 17% change from 33'	3x 40 min.	8.82 psi.	35.28 psi.
99' sw 102' fw 4 Atm. (red, orange, yellow, green)	58.8 psia.			 8% change from 66'	 8% change from 66'	4x 30 min.	11.76 psi.	47.04 psi.

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# Light Absorption and the Diver

*In clear water, approximate depths of colour absorption*



Water absorbs light, which effects how you see colours underwater. As a diver descends, colours of the visible light spectrum are absorbed in order, beginning with lower frequencies (Red) in shallower water, and ending with higher frequencies (Blues and Violet) in deeper water.

As we descend in the water column we will notice a lack of brilliance of colour until mostly greens, blue and greys are perceived. To compensate for this, most divers carry an **Underwater Light** on every dive, even in clear water during a bright sunny day. Taking a light with you enables us see the colours of the reef as they actually are.