

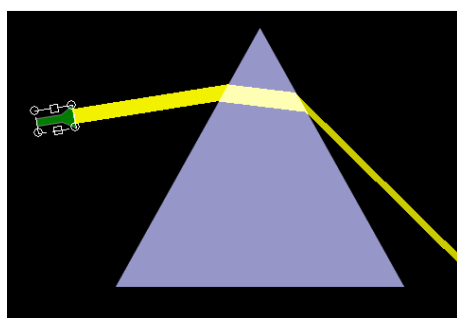
## THE SPECTRUM OF LIGHT

**During this lesson we are going to:**

- *learn about the colour composition of light and the colours of things;*
- *learn the colours of the spectrum in their order.*

1. Open the programme "Crocodile Physics":

1.1 In the Optics module select a triangular prism and a source of parallel beams. Place them in the way shown in Picture 1.



Picture 1

1.2 When the yellow beam of light falls into the prism, the colour of the beam coming out of the prism is \_\_\_\_\_;

1.3 Change the colour of the beam of light into red, green, blue.

1.4 Draw the conclusion:

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1.5 Change the colour of the beam of light into white. What has happened to the outgoing beam of light? What conclusion can you draw?

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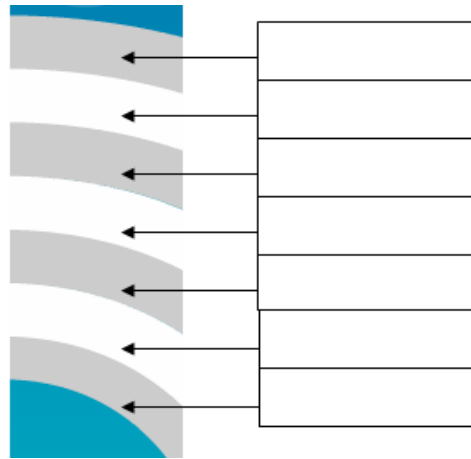
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1.6 How is this phenomenon called? \_\_\_\_\_

1.7 Physicists call the band of seven colours \_\_\_\_\_, and in spoken language it is called \_\_\_\_\_

2. Open MO <http://mkp.emokykla.lt/gamta5-6/lt.php/mo/1127/#grotuvas> and check whether your answers are correct.

3. Find colours in picture 2:



Picture 2

4. Open the programme:

[http://celebrate.ls.no/english/animations/science/regnbuen\\_fargelegg.swf](http://celebrate.ls.no/english/animations/science/regnbuen_fargelegg.swf) and check whether you know the colours of the spectrum in the right order.

5. What colours are necessary for the rainbow to appear in the sky?

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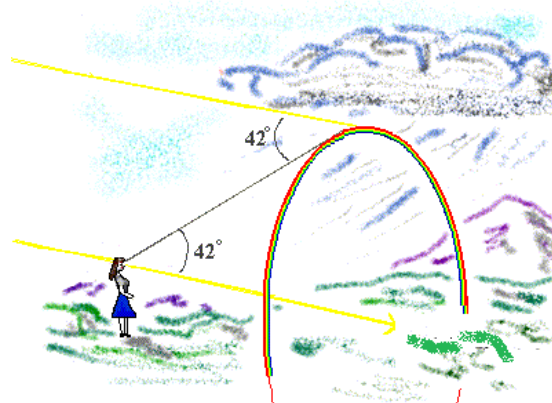
6. Explain Picture 3:

6.1 Where is the sun with regard to the observer?

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6.2 Can we observe the rainbow at midday, when the sun is high above the horizon? Why?

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Picture 3

6.1 Schoolchildren have drawn a rainbow (Pictures 4 and 5):



Picture 4



Picture 5

a. From which direction should the sun rays fall so that the dog in Picture 4 could see the rainbow?

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b. Why did a physics teacher who saw Picture 5 say that the picture is “INCORRECT“?

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7. Open MO <http://mkp.emokykla.lt/gamta5-6/lt.php/mo/1483> and see what happens when we add 7 colours of the spectrum of light. \_\_\_\_\_

8. Open MO <http://mkp.emokykla.lt/gamta5-6/lt.php/mo/1128#grotuvas> and answer: Why do we see coloured objects?

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9. Which of the seven colours of the spectrum of light are considered as the main colours?

10. Open the programme <http://resources.eun.org/xplora/xapplet01.swf> and add the following colours:

RED + GREEN =
RED + BLUE =
BLUE + GREEN =
BLUE + GREEN + BLUE =

11. Open the programme <http://resources.eun.org/xplora/xapplet02.swf> or [http://phet.colorado.edu/simulations/sims.php?sim=Color\\_Vision](http://phet.colorado.edu/simulations/sims.php?sim=Color_Vision) and check the colour of beam when it goes through the filter of light:

a) RED beam going through a GREEN filter:	
b) RED beam going through a BLUE filter:	
c) RED beam going through a RED filter:	
d) RED beam going through a COLOURLESS filter:	
e) WHITE beam going through a RED filter:	
f) SKY-BLUE beam going through a RED filter:	
g) YELLOW beam going through a RED filter:	
h) VIOLET beam going through a RED filter:	
i) SKY-BLUE beam going through a COLOURLESS filter:	
j) SKY-BLUE beam going through a VIOLET filter:	

Draw your conclusion: \_\_\_\_\_

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12. For your HOMEWORK, compare the composition of the colours of light with the colours of painting, discuss your ideas with your arts teacher: <http://mkp.emokykla.lt/gamta5-6/lt.php/mo/1136> .