

NB! This is not the real test – just an example. Use it as preparation for the test on Tuesday.

Test in basic JavaScript, HTML and CSS.

Read each point below and make sure you understand them before you begin the test.

- You have 8 hours to finish the test (480 minutes). Make sure you have enough time to finish the test before you start - you can't "pause" the test.
- The test will be available from 08:00 until 23:59. If you want to use the full 8 hours, you must be sure to start the test before 16:00.
- You must do the test individually without help from anybody.
- You are allowed to read documentation and copy code from *w3schools.com*.
- You are allowed to copy code from the questions in this test.
- You are allowed to copy code from examples/lectures/exercises published in Canvas in MM-206.
- If you already have done a task in a previous (non-mandatory) exercise (including this pre-test), you are allowed to copy your solution.
- **You are not allowed to copy (including copywriting) code from any other websites, chatrooms, Q&A sites etc. or ask others for help (neither in person nor online).**
- You cannot use any premade JavaScript or CSS libraries, e.g., jquery or bootstrap.
- The test consists of a set of questions where the max (total) score is 100 points.
- You must achieve at least 50 points to pass the test.
- You don't need to have everything 100 % correct to obtain points in a question (no: det vil være en skjønnsmessig vurdering av svarene).
- In each question you must deliver the answer as a HTML-file. Make sure you deliver only one HTML-file per question (i.e., you must write both HTML, JavaScript and CSS in the same HTML-file).
- NB! Don't zip any files! (Apart from the exception mentioned below).
- Some questions may consist of sub-questions (a, b, and c). If you manage to finish b), you don't have to deliver a). If you manage to finish c, you don't have to deliver b).
- If you have partially finished sub-questions, you should deliver them in a zip-file. This is the only situation where you are allowed to deliver an answer in a zip-file.
- Be aware that you can only submit the test once (by using the button at the bottom of the test), so be sure you are finished and have included (selected) all the HTML-files before you submit.

Question 1 – Max score: 5 points

Create a program that converts speed from km/h to knots. One knot is the same as 1.852 km/h. Show the result with 2 digits after the decimal point.

Speed in km/h:

Speed in knots: 539.96

Question 2 – Max score: 5 points

Create a program with a slider (an Input-element of type *range*) and a *span*-element. When you drag on the slider, the value of the slider should be shown in the span-element. Set the *min* and *max* values of the slider to 0 and 100:



Question 3 – Max score: 5 points

In the program below we are drawing a circle in a canvas-element. Change the program so that you can use a slider (an Input-element of type *range*) to change the radius of the circle between 0 and 200.

```
<canvas id="cnv" width="400" height="400"></canvas>

<script>

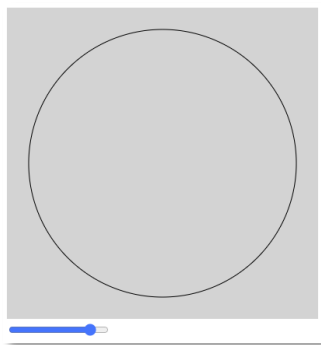
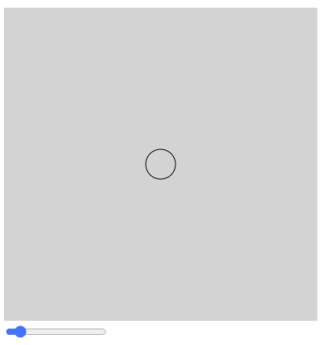
  let cnv = document.getElementById('cnv');
  let ctx = cnv.getContext("2d");
  let radius = 100;

  ctx.fillStyle = "lightgrey";
  ctx.strokeStyle = "black";

  draw();

  function draw() {
    ctx.fillRect(0, 0, 400, 400); //clear the canvas
    ctx.beginPath();
    ctx.arc(200, 200, radius, 0, Math.PI * 2);
    ctx.stroke();
  }

</script>
```



Question 4 – Max score: 5 points

The following code outputs the current date in the console-window:

```
let myDate = new Date();
let dateText = myDate.toString();
console.log(dateText);
```

Thu Sep 08 2022

Use a String-method to extract the month and the day only, and output it in the console-window:

Sep 08

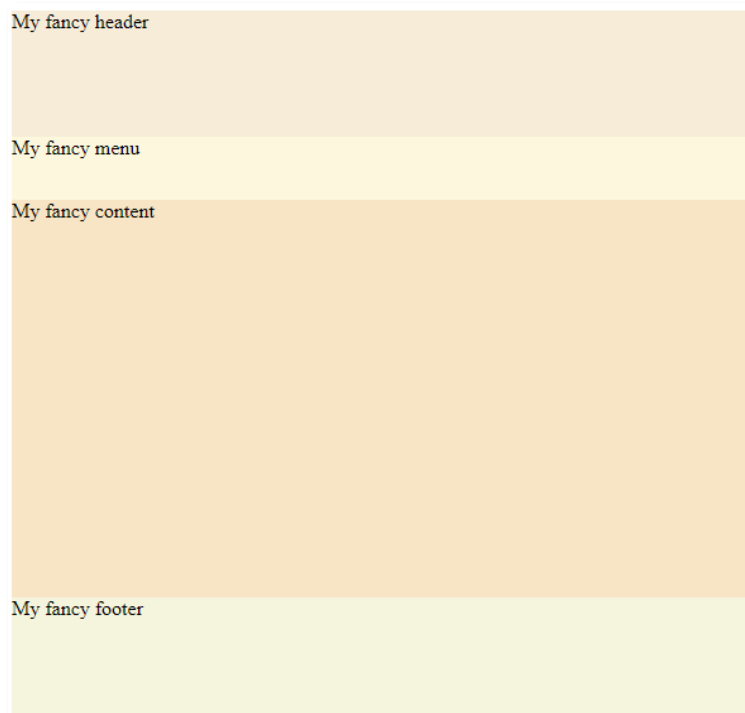
Tip: Assume that the month always starts at position (index) 4 in the date-string.

Question 5 – Max score: 10 points

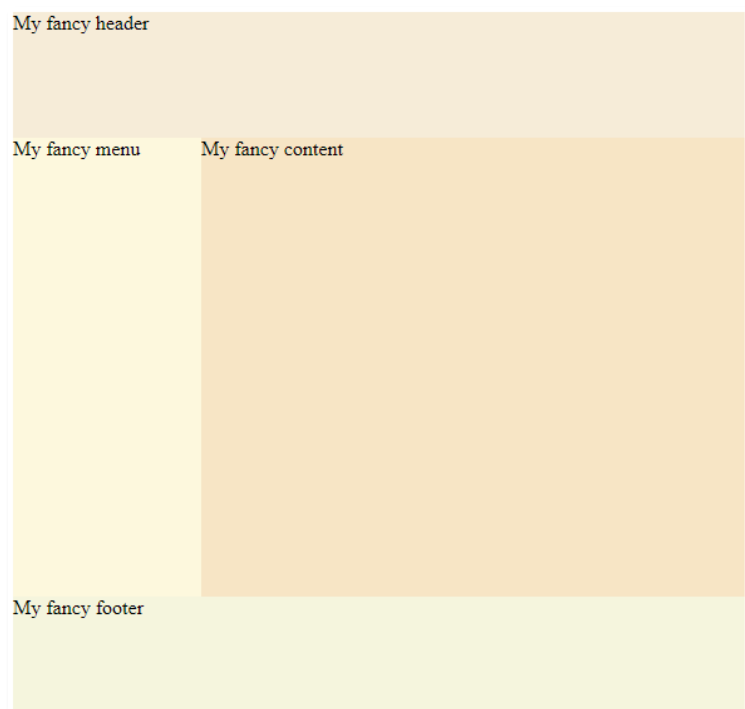
In the program below we have created a layout of div-elements by using a CSS-grid:

```
<div id="container">
  <div class="header">My fancy header</div>
  <div class="menu">My fancy menu</div>
  <div class="content">My fancy content</div>
  <div class="footer">My fancy footer</div>
</div>

<style>
  #container {
    height: 100vh;
    display: grid;
    grid-template-columns: 1fr 1fr;
    grid-template-rows: 100px 50px 1fr 100px;
    grid-template-areas: "hd hd"
                        "mn mn"
                        "ct ct"
                        "ft ft";
  }
  .header {
    grid-area: hd;
    background-color: antiquewhite;
  }
  .menu {
    grid-area: mn;
    background-color: cornsilk;
  }
  .content {
    grid-area: ct;
    background-color: bisque;
  }
  .footer {
    grid-area: ft;
    background-color: beige;
  }
</style>
```



a) Change the CSS-grid so that you get this new layout (let the menu be 150 pixels wide):



b) Make the layout responsive so that the original layout is shown in small screens (e.g., less than 600 pixels wide) and the new layout is shown on larger screens (600 pixels or more).
Tip: use a CSS media query.

Question 6 – Max score: 10 points

- a) In the program below we can click on buttons to create a text-string that consists of the letters A and B. The result is displayed in the console-window:

```
<body>
  <button id="btnA">A</button>
  <button id="btnB">B</button>
</body>

<script>

  let btnA = document.getElementById('btnA');
  let btnB = document.getElementById('btnB');

  let txt = "";

  btnA.addEventListener('click', function(evt) {
    txt += "A";
    console.log(txt);
  });

  btnB.addEventListener('click', function(evt) {
    txt += "B";
    console.log(txt);
  });

</script>
```



Change the program so that when you click on a *Unlock*-button, the program will check if you have clicked the string “ABBA”. If so, the message “You have unlocked the door” should be shown in a h3-element below the buttons.



- b) Change the program in a) and remove the Unlock-button. Instead, let the program check for the correct “code” after each click on the A or B-buttons. Check only that the string *ends* with “ABBA”. I.e., it should be possible to click random on the buttons until you click the right code. Then the message should be shown. Tip: use one of the String-methods.

Question 7 – Max score: 10 points

Create a function named *millisecToCommonTime* that converts a number of milliseconds to hours:minutes:seconds. E.g., to convert 2000 milliseconds, you should be able to write:

```
let myTime = millisecToCommonTime(2000);  
console.log(myTime);
```

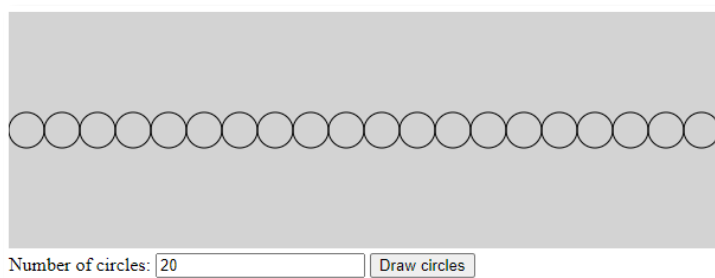
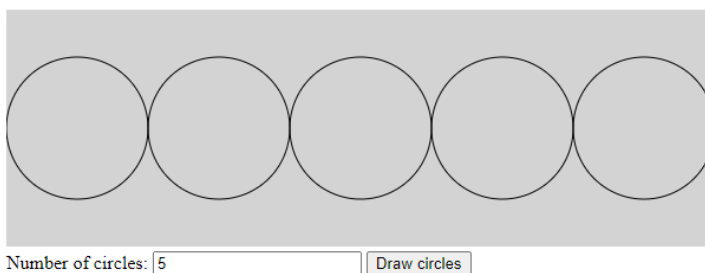
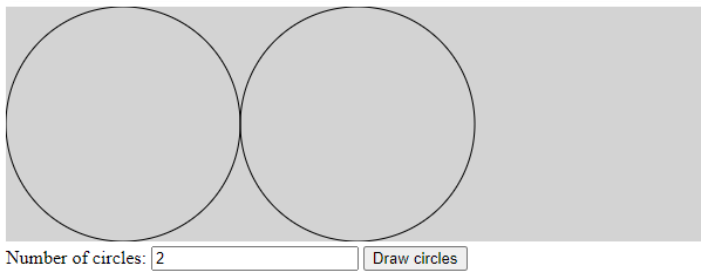
The output in the console-window should then be:

```
00:00:02
```

Tip. You can solve this task in several ways. The maybe easiest is to use a Date-object to do the conversion.

Question 8 – Max score: 10 points

Create a program where you can type in a number of circles in an Input-field. When you click on a button, the circles should be drawn in a canvas-element that is 600 x 200 pixels. Make sure that the program adjusts the radius of the circles so that they fit inside the Canvas:



Tip: You can use this pseudocode to draw the circles:

- $\text{diameter} = 600 / \text{number of circles}$
- if $\text{diameter} > 200$ then set diameter to 200
- $\text{radius} = \text{diameter} / 2$
- $x = \text{radius}$
- $y = 100$
- Go in a loop so many times there are circles (number of circles):
 - Draw a circle in the point (x, y) with the radius
 - $x = x + \text{diameter}$

Question 9 – Max score: 20 points

Create a quiz-program. Use the questions and answers in the array below:

```
let questions = [  
  {  
    q: "What is the capitol of Egypt?",  
    a: "cairo"  
  },  
  {  
    q: "What is the main ingredient in beer?",  
    a: "water"  
  },  
  {  
    q: "What is the name of the president in USA?",  
    a: "joe biden"  
  },  
  {  
    q: "What is the abbreviation of the European Union?",  
    a: "eu"  
  },  
  {  
    q: "What is the abbreviation of Game of Thrones",  
    a: "got"  
  }  
]
```

The user interface should be similar to this:

Question 2

What is the main ingredient in beer?

When you click the button, the program should check the answer and show the next question. You don't need to show any result after each question. Instead, show the result after the last question:

You got 3 correct answers out of 5

It should be possible to type in the correct answer in both lower- and uppercase letters (or a mix).

Question 10 – Max score: 20 points

In the code below we have created an array with some data about different bites of chocolate:

```
let chocoArr = [
  {
    id: 35,
    price: 12,
    name: "Tiger",
    descr: "Lys sjokolademousse med striper av mocca-mousse og overtrekk av mørk sjokolade",
    img_small: "http://sukkergris.no/konfekt/bilder_s/Truffel_boks03.jpg"
  },
  {
    id: 24,
    price: 15,
    name: "Green ferret",
    descr: "Eple-fondant i mørk melkesjokolade",
    img_small: "http://sukkergris.no/konfekt/bilder_s/PralinHardGreenFondant.jpg"
  },
  {
    id: 27,
    price: 21,
    name: "Afterglow",
    descr: "Appelsinfondant blandet med appelsinlikörgelé og overtrekk av mørk sjokolade",
    img_small: "http://sukkergris.no/konfekt/bilder_s/PralinSoftOrangeFondantGel.jpg"
  },
  {
    id: 26,
    price: 15,
    name: "Black mist",
    descr: "Mocca ganache i mørk melkesjokolade",
    img_small: "http://sukkergris.no/konfekt/bilder_s/PralinSoftDarkChoc.jpg"
  },
  {
    id: 30,
    price: 10,
    name: "Black & white",
    descr: "Hvit sjokolade med overtrekk av mørk melkesjokolade",
    img_small: "http://sukkergris.no/konfekt/bilder_s/PureChocDarkWhite.jpg"
  },
  {
    id: 20,
    price: 16,
    name: "Rum & cherry",
    descr: "Kirsebær i rom-likør",
    img_small: "http://sukkergris.no/konfekt/bilder_s/Pralin_cherry_soft_gel.jpg"
  }
];
```


- a) Copy the array and use it in your code to display the chocolates on the webpage similar to this:

	Tiger Lys sjokolademousse med striper av mocca-mousse og overtrekk av mørk sjokolade kr 12,-
	Green ferret Eple-fondant i mørk melkesjokolade kr 15,-
	Afterglow Appelsinfondant blandet med appelsinlikörgelé og overtrekk av mørk sjokolade kr 21,-
	Black mist Mocca ganache i mørk melkesjokolade kr 15,-
	Black & white Hvit sjokolade med overtrekk av mørk melkesjokolade kr 10,-
	Rum & cherry Kirsebær i rom-likør kr 16,-







Requirements:

- Use a loop to list the chocolates on the webpage.
- Place the information about each chocolate inside a div.
- Use a CSS-grid to control the layout inside each chocolate-div:

	100px	1fr
30px	image	name
40px	image	description
30px	image	price

- b) Continue with a) and change the code so that when you click on a chocolate in the list, a bigger image of that chocolate is shown below the list. The link to the bigger images is the same as for the small images, apart from that *bilder_s* is replaced with *bilder_m*:

In the example below, we have clicked on the chocolate named *Green ferret*:

	Tiger Lys sjokolademousse med striper av mocca-mousse og overtrekk av mørk sjokolade kr 12,-
	Green ferret Eple-fondant i mørk melkesjokolade kr 15,-
	Afterglow Appelsinfondant blandet med appelsinlikörgelé og overtrekk av mørk sjokolade kr 21,-
	Black mist Mocca ganache i mørk melkesjokolade kr 15,-
	Black & white Hvit sjokolade med overtrekk av mørk melkesjokolade kr 10,-
	Rum & cherry Kirsebær i rom-likør kr 16,-

